

SITE: Cedartown Municipal  
BREAK: 8.6  
OTHER: v. 3

# Five-Year Review Report

## Second Five-Year Review Report

For

**Cedartown Municipal Landfill Site  
(EPA ID #: GAD980495402)**

**Cedartown  
Polk County, Georgia**

**September 2006**

**Prepared for:**  
Environmental Protection Agency  
Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, GA 30303-3104



**Prepared by:**  
US Army Corps of Engineers  
Savannah District  
P. O. Box 889  
Savannah, GA 31402-0889



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**Approved by:**

A handwritten signature in black ink, appearing to read "Beverly H. Banister".

Beverly H. Banister,  
Acting Director, Waste Management Division  
US EPA, Region 4

**Date:**

9-21-06

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## List of Acronyms

|        |   |
|--------|---|
| ARAR   | Applicable or Relevant and Appropriate Requirement                    |
| CD     | Consent Decree  |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR    | Code of Federal Regulations   |
| COC    | Contaminants of Concern   |
| EPA    | Environmental Protection Agency                                       |
| EPD    | Georgia Environmental Protection Division                             |
| GCL    | Geosynthetic Clay Liner   |
| MCL    | Maximum Contaminant Level   |
| MCLG   | Maximum Contaminant Level Goal  |
| MDL    | Method Detection Limit  |
| NCP    | National Oil and Hazardous Substances Pollution Contingency Plan      |
| NPL    | National Priorities List  |
| O&M    | Operations and Maintenance  |
| OUs    | Operable Units  |
| PRP    | Potentially Responsible Party   |
| QA/QC  | Quality Assurance/Quality Control                                     |
| RA     | Remedial Action   |
| RCRA   | Resource Conservation and Recovery Act                                |
| RD     | Remedial Design   |
| RI/FS  | Remedial Investigation/Feasibility Study                              |
| ROD    | Record of Decision  |
| SARA   | Superfund Amendment and Reauthorization Act                           |
| SVOCs  | Semi-Volatile Organic Compounds                                       |
| UAO    | Unilateral Administrative Order                                       |
| USACE  | U.S. Army Corps of Engineers  |
| VOCs   | Volatile Organic Compounds  |

## **Executive Summary**

The United States Environmental Protection Agency (EPA) Region IV has conducted a five-year review of the remedial actions implemented at the Cedartown Municipal Landfill Superfund Site in Polk County, Georgia. Technical support for the review was provided by the U.S. Army Corps of Engineers, Savannah District. This review was conducted from April 2006 through September 2006. This report documents the results of that review. This is the second five-year review for the Cedartown Municipal Landfill Superfund Site. The first five-year review was completed on September 28, 2001. The trigger for this second five-year review corresponds to EPA concurrence signature date of the first Five-Year Review Report, September 28, 2001. The five-year review is required by CERCLA because the remedial action, upon completion, will leave hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure.

All remedies have been constructed for the site. The site was deleted from the NPL on March 10, 1999. Since that time, there has been no maintenance performed on the landfill cover nor has the landfill cover been inspected. Ground-water monitoring at the site has not been performed by the City of Cedartown since September 1997. The May 1998 ROD Amendment discontinued ground-water monitoring at the site because the existing data had demonstrated that contamination was not migrating away from the site. In July 2006, EPA tasked the Corps of Engineers to sample the ground water at the site. Seven monitoring wells including; two background wells, one internal well, and four perimeter wells, were located and successfully sampled.

Analysis of the July 2006 sampling results indicates that two perimeter monitoring wells contained Manganese in concentrations exceeding the performance standards as defined in the ROD and ESD. Manganese was detected in monitoring well OW-3 at a concentration of 1.43 mg/L and in background monitoring well OW-6B at a concentration of 0.967 mg/L. Trend analyses of the Manganese concentrations detected in OW-3 and the other monitoring wells sampled indicate the concentrations are decreasing with time. Monitoring well OW-6B is up gradient of the landfill and does not represent contamination due to the landfill.

The ground-water data continues to support the conclusion reached by EPA prior to the ROD Amendment that Manganese concentration detected in the monitoring wells did not appear to be related to landfill impacts.

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. ARARs for ground water were evaluated to determine if the remedy is still protective. Based on the ARAR review, no performance standards have changed to any degree that would negatively affect the protection of the remedy.

The remedy is considered protective over the short-term and there is no evidence of exposure. However, to ensure that the remedy remains protective over the long-term, the landfill cover must be inspected semi-annually and maintained by the City of Cedartown.

## Five-Year Review Summary Form

| SITE IDENTIFICATION  |   |                                     |
|--|---|-------------------------------------|
| Site name: Cedartown Municipal Landfill Site                           |   |                                     |
| EPA ID: GAD980495402   |   |                                     |
| Region: IV   | State: GA   | City/County: Cedartown, Polk County |
| SITE STATUS  |   |                                     |
| NPL status: Deleted from NPL   |   |                                     |
| Remediation status (under construction, operating, complete): Complete |   |                                     |
| Multiple OUs*: No    Construction completion date: 8/16/1996           |   |                                     |
| Has site been put into reuse? No                                       |   |                                     |
| REVIEW STATUS  |   |                                     |
| Lead agency (EPA, State, Tribe Federal agency): US EPA                 |   |                                     |
| Author name: Steven M. Bath, P.E.                                      |   |                                     |
| Author title: Environmental Engineer                                   | Author affiliation: US Army Corps of Engineers, Savannah District |                                     |
| Review period: April 1, 2006 to September 28, 2006                     |   |                                     |
| Date(s) of site inspection: April 24, 2006                             |   |                                     |
| Type of Review:<br>Statutory   |   |                                     |
| Review Number: 2 (Second)  |   |                                     |
| Triggering action event: First Five-Year Review Report Completion Date |   |                                     |
| Trigger action date (from CERCLIS): 09/28/2001                         |   |                                     |
| Due date: 9/28/2006  |   |                                     |

\* "OU" refers to operable unit.

**Five –Year Review Summary Form, cont'd.**

**Issues:**

The site was deleted from the NPL on March 10, 1999. Since that time, there has been no maintenance performed on the landfill cover nor has the landfill cover been inspected.

**Recommendations and Follow-up Actions:**

The landfill cover requires semi-annual inspection and maintenance by the City of Cedartown.

**Protectiveness Statements:**

The remedy is considered protective over the short-term and there is no evidence of exposure. However, to ensure that the remedy remains protective over the long-term, the landfill cover must be inspected semi-annually and maintained by the City of Cedartown.

**Other Comments:**

None

## I. Introduction

The United States Environmental Protection Agency (EPA) Region IV has conducted a five-year review of the remedial actions implemented at the Cedartown Municipal Landfill Superfund Site in Polk County, Georgia. Technical support for the review was provided by the U.S. Army Corps of Engineers, Savannah District. This review was conducted from April 2006 through September 2006. This report documents the results of that review. The purpose of a five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review Reports. In addition, Five-Year Review Reports identify issues found during the review, if any, and identify recommendations to address them.

EPA is overseeing this review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with Section 9604 (CERCLA §104) or Section 9606 (CERCLA §106) the President shall take action or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The EPA interpreted this requirement further in the NCP, as stated in 40 CFR 300.430(f)(4)(ii):

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

This is the second five-year review for the Cedartown Municipal Landfill Superfund Site. The first five-year review was completed on September 28, 2001. The trigger for this second five-year review corresponds to EPA concurrence signature date of the first Five-Year Review Report, September 28, 2001. The five-year review is required by CERCLA because the remedial action, upon completion, will leave hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure. All remedies have been constructed for the site. The site was deleted from the NPL on March 10, 1999. Since that time, there has been no maintenance performed on the landfill cover nor has the landfill cover been inspected. Ground-water monitoring at the site has not been conducted by the City of Cedartown since September 1997.



## II. Site Chronology

Table 1 lists the chronology of events for the Cedartown Municipal Landfill Superfund Site.

**Table 1: Chronology of Site Events**

| <b>Event</b>                           | <b>Start Date</b> | <b>Completion Date</b> |
|--|-------------------|------------------------|
| Discovery                              |                   | 04/18/1985             |
| Preliminary Assessment                 |                   | 04/18/1985             |
| NPL RP Search                          |                   | 03/26/1987             |
| Site Inspection                        |                   | 05/15/1987             |
| HRS Package                            |                   | 10/13/1987             |
| Proposal to NPL                        |                   | 06/24/1988             |
| Final Listing on NPL                   |                   | 03/31/1989             |
| Administrative Order on Consent        |                   | 03/30/1990             |
| RI/FS Negotiations                     | 12/14/1989        | 03/30/1990             |
| Removal Assessment                     | 09/11/1991        | 09/11/1991             |
| Record of Decision                     |                   | 11/02/1993             |
| PRP RI/FS                              | 03/30/1990        | 11/02/1993             |
| Administrative Records                 | 04/29/1993        | 11/29/1993             |
| RD/RA Negotiations                     | 03/28/1994        | 03/28/1994             |
| Unilateral Administrative Order        |                   | 05/12/1994             |
| PRP RD                                 | 05/23/1994        | 11/04/1994             |
| Administrative Order on Consent        |                   | 09/29/1995             |
| Explanation of Significant Differences |                   | 06/03/1996             |
| Preliminary Close-Out Report Prepared  |                   | 08/16/1996             |
| Record of Decision Amendment           |                   | 05/12/1998             |
| PRP Remedial Action                    | 11/04/1994        | 02/25/1999             |
| Deletion from NPL                      | 11/23/1998        | 03/10/1999             |
| First Five-Year Review                 | 06/12/2001        | 09/28/2001             |

### **III. Background**

The 94-acre Cedartown Municipal Landfill site is located on the outskirts of the City of Cedartown, Polk County, GA, approximately 62 miles NW of Atlanta. The site encompasses a former iron ore mine, which subsequently was used as a municipal landfill. The site is on the western edge of Cedartown and is bordered to the east by Tenth Street, the south by Prior Station Road (Route 100), and the north and west by undeveloped or agricultural land. Property to the east of the site consists of an industrial complex, while land to the north, south, and west is a mixture of residential, agricultural, and undeveloped land.

The site has wooded areas along the north, south and west. The eastern half of the Site is covered with thick grasses. Approximately 10-acres between the eastern and western halves of the Site were not used for landfill operations. The crown of the Site is 872 feet above mean sea level and gently slopes on all sides with the exception of portions of the western perimeter which are relatively steep. A seasonal stream and pond exist approximately 700 feet west of the Site perimeter. Minor areas of erosion have been noted in the central, northwest and eastern portions of the site. No exposed refuse has been noted in any of the eroded areas. One leachate seep exists on the site. The Cedartown Spring, which serves as the drinking water source for the City of Cedartown is approximately 1.5 miles from the Site.

Although the site is not completely fenced, access to the site is limited due to the dense vegetation along the northern, southern, and western boundaries of the site.

The site was originally developed in the 1880's as an Iron ore strip mine. Mining operations at the site continued off and on until the 1900's. At that time the land was leased and then acquired by the city of Cedartown to be used as a landfill. The site was permitted from the Georgia Environmental Protection Division to operate it as a sanitary landfill.

The open pits remaining from mining operations were used for waste disposal areas. These pits contained native clay and in some cases had been partially backfilled with clay stockpiled from mining operations. The site primarily received municipal solid waste sanitary although it did receive some industrial waste including: industrial waste sludge, animal and vegetable fats and oils, liquid dye wastes, latex paint, and plant trash. Wastes were buried on approximately 25 acres of the site to a depth of 12 feet below ground surface. Once wastes were in place the pits were covered and graded.

It was closed in 1979 with a layer of clay varying in thickness from 1 to 12 feet and vegetative cover. The site was proposed for the NPL in 1988 and finalized in March 1989. The Cedartown Municipal Landfill Potentially Responsible Party (PRP) Committee completed the RI/FS in 1993 pursuant to EPA Administrative Order of Consent in 1990.

The baseline risk assessment conducted as part of the RI identified the following contaminants of concern (COCs) in ground water: Manganese, Beryllium, Cadmium, Chromium, and Lead. The baseline risk assessment determined that the soil and soil/waste at the site did not present an unacceptable risk at the site. Therefore, no COCs were retained for soil and soil/waste and no further action was taken. The selected remedial alternative addressed contaminated ground water and contaminated leachate. Pathways of exposure include ingestion of ground water and exposure to surface waters. The state concurred with the selected remedy.

The first Five-Year Review was completed in September of 2001. According to the first five-year review report, the remedy stipulated in the Record of Decision remained protective and should be continued.

## **IV. Remedial Actions**

### **Remedy Selection**

The Record of Decision (ROD) for the site was issued on November 2, 1993. The selected Remedial Action (RA) at this site included: maintaining the cover and seep controls, deed restrictions and land use restrictions, surface-water monitoring; natural attenuation, ground-water monitoring, and a two year review. If continued monitoring indicated that natural attenuation is not effective, a contingency Remedial Action to extract and treat the ground water with a "to be determined" technology was to be implemented with off-site discharge. The overall present worth costs at the time of remedy selection was \$625,000. The total O&M costs were estimated at the time at a present worth cost of \$615,000 during remedy selection for an O&M duration of 30 years.

Major components of the selected remedy, as stipulated in the Record of Decision, included:

- Cover maintenance and seep controls;
- Institutional controls, such as record notices and deed, zoning, and land use restrictions;
- Ground and surface-water monitoring program to ensure that natural attenuation processes would be effective and that contaminants would not migrate;
- A two year review during which EPA would determine whether ground-water performance standards continue to be appropriate and if natural attenuation processes are effective;
- A contingency Remedial Action which includes ground-water extraction, on-site treatment, and discharge under National Pollution Discharge Elimination System (NPDES) to nearby surface water or POTW;
- Continued ground-water monitoring upon attainment of the performance standards at sampling intervals to be approved by EPA until EPA approves a five year review concluding that the alternative has achieved continued attainment of the performance standards and remains protective of human health and the environment.

Based upon the Administrative Record, the requirements of the CERCLA and the NCP, the detailed analysis of alternatives, and consideration of public and state comments; the EPA selected an amended remedy for this site. The ROD Amendment was signed on May 12, 1998. EPA's rationale for modifying the remedy was based on information obtained during the Remedial Action phase of the project. Ground-water monitoring for a two and one-half year period had demonstrated that ground-water contamination levels for all contaminants of concern, except Manganese, were below

performance standards. Ground-water concentrations of Manganese were stable. EPA analysis of the ground-water data demonstrated that the Manganese contamination in the wells exceeding performance standards did not appear to be related to landfill impacts. The selected cleanup alternative involved implementation of institutional controls to restrict ground-water use in the areas where performance standards were exceeded, and maintenance of the landfill cover. Ground-water monitoring would not be continued since existing data have demonstrated that contamination is not migrating away from the site. In addition, this Record of Decision Amendment removed the contingency action of pump and treat. EPA was required to conduct a five-year review to determine if the remedy remained protective of human health and the environment. The estimated cost of implementing the amended ROD was \$5,000 at the time of the amendment.

Major components of the amended remedy, included:

- Maintenance of the landfill cover;
- Institutional controls to restrict ground-water use beneath and immediately surrounding the site;
- Removal of the requirement for ground-water monitoring and the pump and treat contingency.

This remedy addressed the first and final cleanup action planned for the site. The purpose of the remedial action was to prevent current or future exposure to landfill waste and ground water and to reduce the migration of contaminants.

A map of the site is included as Attachment B.

### **Remedy Implementation**

- Landfill cover and seep inspections were conducted semi-annually for the duration of the RA program (November 1994 – February 1998).
- Monitoring data collected quarterly during the RA (January 1995 – September 1997) revealed that the only COC consistently detected in some of the perimeter monitoring wells is Manganese. Analysis of the ground-water data revealed three perimeter monitoring wells had a significantly higher concentration of Manganese than the mean Manganese concentration from interior monitoring-wells. This indicated the Manganese detected was naturally occurring. This historic ground-water data is further summarized in Section VI of this document.
- Based on the results of ground-water monitoring, the ROD was amended (May 1998) to remove the requirements for ground-water monitoring and the pump and treat contingency.

- Deed restrictions have been placed in effect as stipulated by the amended Record of Decision (May 1998).
- This document is the second of the Five-Year Reviews to be prepared. Thus, this condition of the Record of Decision is being fulfilled. The First Five-Year Review Report was completed in September 2001.

### **System Operations/O&M**

The Operation and Maintenance Program as presented in the Remedial Design/Remedial Action Work Plan consisted of semi-annual site surveys, regrading or repacking of soil as needed to maintain a minimum 3 foot cover over waste materials, and ground-water monitoring. The amended ROD removed the requirement for ground-water monitoring. The estimated cost of implementing the amended ROD was \$5,000 at the time of the amendment. This appears to have been the costs of implementing institutional controls.

There have been no operation or maintenance activities performed associated with the site. The landfill cover has not been maintained nor has it been inspected. There have been no ground-water monitoring events conducted by the City of Cedartown since the September 1997 event. There are no O&M cost associated with site.

## **V. Progress Since Last Review**

The first Five-Year Review determined the protectiveness of the remedy for the site to be protective of human health and the environment because the remedial actions at all operable units are protective. The report recommended two actions to be taken. The first recommendation was for a ground water monitoring event to occur immediately. The second recommendation was for ground water monitoring events to occur coinciding with the future required Five-Year Review. Both of these actions are required even though the site has been deleted from the NPL. The City of Cedartown did not conduct either ground-water monitoring event. As part of this Five-Year Review, EPA tasked the Corps of Engineers to sample the ground-water monitoring wells in July, 2006. The results of that sampling event are included in this review.

Since the site has been taken off the NPL, no cover maintenance or semi-annual inspections have been performed.

## **VI. Five-Year Review Process**

The purpose of a five-year review is to determine whether the remedy at a site is protective of human health and the environment. The review does not reconsider decisions made during the selection of the remedy, but evaluates the implementation and performance of the selected remedy.

## **Administrative Components**

The Cedartown Municipal Landfill Five-Year Review Team is led by Brian Farrier of EPA, Remedial Project Manager for the site. Technical expertise for the review was provided by Steven Bath, Environmental Engineer, and Mark Harvison, Chemist, both with the Corps of Engineers, Savannah District. The schedule for the review extends through September 28, 2006. The components of the review included:

- Community notification;
- Document review;
- Data review;
- Site inspection;
- Local interviews;
- Monitoring well sampling and analysis; and
- Five-Year Review Report development and review.

## **Community Notification**

The Cedartown Municipal Landfill Site has had little public involvement or interest since the site was deleted from the NPL. When completed, the Five-Year Review Report will be placed in the Cedartown Public Library, information repository for the project. A public notice has been placed in the Cedartown Standard announcing its availability for review and comment. A copy of the Public Notice is included as Attachment G.

## **Document Review**

Electronic copies of all site documents were provided by the EPA Project Manager, Brian Farrier. The project files were reviewed the weeks of April 17 through April 28. Documents that were reviewed were related to site investigations, feasibility studies, remedial design, the RODs, construction reports, operation and maintenance plans and monitoring data. The complete list of documents is included as Attachment A.

## **ARAR Review**

The following applicable or relevant and appropriate requirements (ARARs) were reviewed for changes that could affect the protectiveness of the selected remedy:

- Safe Drinking Water Act (40 CFR Parts 141 and 143);
- Resource Conservation and Recovery Act (40 CFR Part 257 - 264);
- Clean Water Act (40 CFR Parts 131, 141, 144, and 403);
- Clean Air Act (40 CFR Parts 50 and 61);
- Georgia Drinking Water Regulations - Chapter 391-3-5;
- Georgia Water Quality Control Regulations and Standards;
- Georgia Air quality Act;
- Georgia Water Well Standards;

As per EPA guidance, only those ARARs that address risk posed to human health or the environment need be reviewed. Based on the current status of the Site, no changes were discovered between the original ARARs cited in the Record of Decision and the current statutes and regulations that would apply to the remedial action. This applied to both the

chemical-specific ARARs and to the location-specific ARARs. Although concentrations on Manganese repeatedly exceed the performance standards, they are within the range of naturally occurring Manganese near the site.

## **Data Review**

### **Review of Historic Ground-Water Concentrations**

The data collected during the Remedial Action (RA) and presented in the Two-Year Evaluation report was reviewed. Ten rounds of ground-water monitoring occurred between January 1995 and September 1997. The ground-water monitoring network for the site consist of three background wells (CL-09-WP, OW-7R, and OW-6B), seven perimeter wells (OW-1, OW-2, OW-3, OW-4, OW-5, CL-03-WP, and CL-04-WP), and three internal wells (CL-05-WP, CL-06-WP, and CL-07-WP). All of the background and perimeter wells are bedrock wells screened in the Newala Limestone. Some of the internal wells are screened at intervals that include the residuum/saprolite unit and bedrock. The internal wells provide information on the contaminant mass migrating into the bedrock aquifer. Historically, the internal wells were monitored for informational purposes only and the data was not included in the analysis for performance standard compliance. This procedure is in agreement with the ROD Amendment which states the performance standards do not apply in the area beneath the landfill.

For all of the RA monitoring events, concentrations of Beryllium and Cadmium were below the reported detection limit. Chromium was detected several times in two interior monitoring wells, CL-06-WP and CL-07-WP and once in a perimeter monitoring well, OW-1. The concentration of Chromium detected in the perimeter well, 10.4 ug/L, was below the performance standard of 100 ug/L. Lead was detected in each of the interior monitoring wells at least once during RA monitoring. Concentrations ranged from 3.0 ug/L to 26.8 ug/L. None of the perimeter monitoring wells contained lead during any of the RA sampling events. Manganese was consistently detected in perimeter monitoring wells during Remedial Action monitoring. Concentrations of Manganese in monitoring wells OW-1, OW-3, and OW-4 significantly exceeded the performance standard. Concentrations of Manganese detected at the site, however, are lower than the concentrations naturally occurring in the region surrounding the site. Table 2 provides a summary of the historic RA data for the site.



| Table 2                    |           |           |           |            |                 |           |           |            |           |           |
|----------------------------|-----------|-----------|-----------|------------|-----------------|-----------|-----------|------------|-----------|-----------|
| Historic Ground-Water Data |           |           |           |            |                 |           |           |            |           |           |
| Monitoring Well OW-2       |           |           |           |            | Results in mg/L |           |           |            |           |           |
| Analyte                    | 1/5/1995  | 4/27/1995 | 7/20/1995 | 10/23/1995 | 1/3/1996        | 4/24/1996 | 7/10/1996 | 10/24/1996 | 2/12/1997 | 9/9/1997  |
| Beryllium                  | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005         | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Cadmium                    | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005         | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Chromium                   | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01          | < 0.01    | < 0.01    | < 0.01     | < 0.01    | < 0.01    |
| Lead                       | < 0.005   | < 0.003   | < 0.003   | < 0.003    | < 0.003         | < 0.003   | < 0.003   | < 0.003    | < 0.003   | 0.0171 J  |
| Manganese                  | 0.587     | 0.527     | 1.17      | 0.285      | 0.468           | 0.305     | 0.782     | 0.682      | 0.191     | 1.26      |
|                            |           |           |           |            |                 |           |           |            |           |           |
| Monitoring Well OW-3       |           |           |           |            | Results in mg/L |           |           |            |           |           |
| Analyte                    | 1/10/1995 | 4/26/1995 | 7/22/1995 | 10/26/1995 | 1/4/1996        | 4/23/1996 | 7/11/1996 | 10/24/1996 | 2/18/1997 | 9/10/1997 |
| Beryllium                  | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005         | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Cadmium                    | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005         | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Chromium                   | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01          | < 0.01    | < 0.01    | < 0.01     | < 0.01    | < 0.01    |
| Lead                       | < 0.003   | < 0.003   | < 0.003   | < 0.003    | < 0.003         | < 0.003   | < 0.003   | < 0.003    | < 0.003   | < 0.003   |
| Manganese                  | 0.114     | 4.89      | 1.16      | 4.99       | 4.48            | 4.92      | 5.3       | 4.52       | 4.83      | 4.64      |
|                            |           |           |           |            |                 |           |           |            |           |           |
| Monitoring Well OW-4       |           |           |           |            | Results in mg/L |           |           |            |           |           |
| Analyte                    | 1/6/1995  | 4/25/1995 | 7/19/1995 | 10/25/1995 | 1/2/1996        | 4/24/1996 | 7/9/1996  | 10/23/1996 | 2/10/1997 | 9/9/1997  |
| Beryllium                  | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005         | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Cadmium                    | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005         | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Chromium                   | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01          | < 0.01    | < 0.01    | < 0.01     | < 0.01    | < 0.01    |
| Lead                       | < 0.005   | < 0.003   | < 0.003   | < 0.003    | < 0.003         | < 0.003   | < 0.003   | < 0.003    | < 0.003   | < 0.003   |
| Manganese                  | 2.29      | 5.06      | 2.38      | 5.74       | 3.84            | 5.12      | 3.33      | 1.93       | 7.66      | 2.11      |

**Table 2**  
**Historic Ground-Water Data**

| <b>Monitoring Well OW-5</b> |          | <b>Results in mg/L</b> |           |            |          |           |           |            |          |          |
|-----------------------------|----------|------------------------|-----------|------------|----------|-----------|-----------|------------|----------|----------|
| Analyte                     | 1/6/1995 | 4/25/1995              | 7/20/1995 | 10/25/1995 | 1/4/1996 | 4/22/1996 | 7/10/1996 | 10/23/1996 | 2/9/1997 | 9/9/1997 |
| Beryllium                   | < 0.005  | < 0.005                | < 0.005   | < 0.005    | < 0.005  | < 0.005   | < 0.005   | < 0.005    | < 0.005  | < 0.005  |
| Cadmium                     | < 0.005  | < 0.005                | < 0.005   | < 0.005    | < 0.005  | < 0.005   | < 0.005   | < 0.005    | < 0.005  | < 0.005  |
| Chromium                    | < 0.01   | < 0.01                 | < 0.01    | < 0.01     | < 0.01   | < 0.01    | < 0.01    | < 0.01     | < 0.01   | < 0.01   |
| Lead                        | < 0.005  | < 0.003                | < 0.003   | < 0.003    | < 0.003  | < 0.003   | < 0.003   | < 0.003    | < 0.003  | < 0.003  |
| Manganese                   | 0.0108   | < 0.01                 | < 0.01    | < 0.01     | < 0.01   | < 0.01    | < 0.01    | < 0.01     | < 0.01   | < 0.01   |

| <b>Monitoring Well CL-07-WP</b> |          | <b>Results in mg/L</b> |  |
|---------------------------------|----------|------------------------|--|
| Analyte                         | 5/2/1995 | 4/24/1996              |  |
| Beryllium                       | < 0.005  | < 0.005                |  |
| Cadmium                         | < 0.005  | < 0.005                |  |
| Chromium                        | 0.23     | 0.398                  |  |
| Lead                            | 0.0268   | 0.0113                 |  |
| Manganese                       | 0.81     | 0.274                  |  |

| <b>Monitoring Well OW-7R</b> |           | <b>Results in mg/L</b> |           |            |          |           |           |            |           |           |
|------------------------------|-----------|------------------------|-----------|------------|----------|-----------|-----------|------------|-----------|-----------|
| Analyte                      | 1/23/1995 | 4/28/1995              | 7/19/1995 | 10/24/1995 | 1/3/1996 | 4/24/1996 | 7/10/1996 | 10/24/1996 | 2/10/1997 | 9/10/1997 |
| Beryllium                    | < 0.005   | < 0.005                | < 0.005   | < 0.005    | < 0.005  | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Cadmium                      | < 0.005   | < 0.005                | < 0.005   | < 0.005    | < 0.005  | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Chromium                     | 0.0101    | < 0.01                 | < 0.01    | < 0.01     | < 0.01   | < 0.01    | < 0.01    | < 0.01     | < 0.01    | < 0.01    |
| Lead                         | 0.011     | < 0.003                | < 0.003   | < 0.003    | < 0.003  | < 0.003   | < 0.003   | < 0.003    | < 0.003   | < 0.003   |
| Manganese                    | 0.491     | 0.202                  | 0.232     | 0.227      | 0.252    | 0.252     | 0.225     | 0.191      | 0.167     | 0.202     |

| <b>Monitoring Well OW-6B</b> |          | <b>Results in mg/L</b> |           |            |          |           |           |            |           |           |
|------------------------------|----------|------------------------|-----------|------------|----------|-----------|-----------|------------|-----------|-----------|
| Analyte                      | 1/5/1995 | 4/25/1995              | 7/23/1995 | 10/26/1995 | 1/3/1996 | 4/24/1996 | 7/11/1996 | 10/28/1996 | 2/11/1997 | 9/10/1997 |
| Beryllium                    | < 0.005  | < 0.005                | < 0.005   | < 0.005    | < 0.005  | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Cadmium                      | < 0.005  | < 0.005                | < 0.005   | < 0.005    | < 0.005  | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |
| Chromium                     | < 0.01   | < 0.01                 | < 0.01    | < 0.01     | < 0.01   | < 0.01    | < 0.01    | 0.01062    | < 0.01    | < 0.01    |
| Lead                         | < 0.005  | 0.005                  | < 0.003   | < 0.003    | 0.0042   | 0.0036    | < 0.003   | < 0.003    | < 0.003   | < 0.003   |
| Manganese                    | 0.0451   | 0.0836                 | 0.091     | 0.0967     | 0.152    | 0.07      | 0.124     | 0.296      | 0.0715    | 0.231     |

## **July 2006 Ground-Water Monitoring Results**

For the July 2006 sampling event, seven monitoring wells including; two background wells, one internal well, and four perimeter wells, were located and successfully sampled. Perimeter wells OW-1, CL-03-WP, and interior wells CL-05-WP, and CL-06-WP were damaged and could not be sampled. The perimeter wells were cross gradient to the site and do not affect the assessment of the remedy. Monitoring well CL-04-WP was dry during this sampling event. The only monitoring well that could not be located was internal monitoring well CL-09-WP. The July 2006 ground-water contours developed for the site are shown on the map in Attachment B.

Analysis of the July 2006 sampling results indicates that three detections exceed the performance standards as defined in the ROD and ESD. These include exceedences of Manganese in two wells and Chromium in one well. Table 3 provides a summary of the July 2006 analytical data.

Manganese was detected in monitoring well OW-3 at a concentration of 1.43 mg/L and in background monitoring well OW-6B at a concentration of 0.967 mg/L. The previous sampling data indicates monitoring well OW-3 historically contains Manganese at higher concentrations than the landfill internal wells, CL-05-WP and CL-06-WP. This supports the argument by the PRP that the Manganese detected in monitoring well OW-3 is not related to the landfill. Trend analysis of the Manganese concentrations detected in OW-3 indicates the concentrations are decreasing with time. Graphs of analytical data including trends lines are included in Attachment C. Monitoring well OW-6B is up gradient of the landfill and does not represent contamination due to the landfill.

Chromium was detected in monitoring well CL-07-WP at a concentration of 0.13 mg/L. CL-07-WP is an internal well and is not required to meet the performance standard. Trend analysis of the historic data for this monitoring well indicates a decreasing trend for detected Chromium concentrations. Chromium was not detected in any of the perimeter monitoring wells indicating it is attenuating before reaching the landfill boundary.

Review of the available ground-water monitoring data indicates ground-water contamination due to Chromium is limited to the area directly below the landfill. Concentrations of Manganese in the ground water are decreasing over time in all of the wells sampled. The most recent ground-water data continues to support the conclusion that Manganese concentration detected in the monitoring wells are not related to landfill impacts. This was the conclusion reached by EPA prior to the ROD Amendment.

The laboratory analytical data for the July 2006 ground-water monitoring event is included in Attachment H.

**Table 3**  
**July 2006 Analytical Results**

| Analyte   | Performance<br>Standard<br>(ug/L) | Monitoring Wells           |             |         |        |            |       |            |
|-----------|-----------------------------------|----------------------------|-------------|---------|--------|------------|-------|------------|
|           |                                   | OW-2                       | OW-3        | OW-4    | OW-5   | OW-6B      | OW-7R | CL-07-WP   |
|           |                                   | lab data converted to ug/L |             |         |        |            |       |            |
| Beryllium | 4                                 | < 1                        | < 1         | < 1     | < 1    | < 1        | < 1   | 0.5 J      |
| Cadmium   | 5                                 | < 1                        | < 1         | < 1     | < 1    | < 1        | 1.11  | 1.25       |
| Chromium  | 100                               | < 20                       | < 20        | < 20    | < 20   | < 20       | < 20  | <b>130</b> |
| Lead      | 15                                | 0.547                      | 0.805       | < 1     | < 1    | < 1        | 2.19  | 4.9        |
| Manganese | 840                               | 45.6                       | <b>1430</b> | 384     | 5.55 J | <b>967</b> | 63.8  | 254        |
| Sodium    |                                   | 9,980                      | 3,300       | 187,000 | 1,650  | 1,730      | 2,040 | 65,400     |
| Vanadium  |                                   | < 20                       | < 20        | < 20    | < 20   | < 20       | < 20  | < 20       |
| Zinc      |                                   | < 60                       | 28.7 J      | < 60    | < 60   | < 60       | 49    | 83.1       |

**Notes:**

< value indicates the analyte was not detected at or above the laboratory reporting limit.

J values are estimated above the method detection limit but below the reporting limit.

Results reported for Beryllium are from a second laboratory analysis. In the first analysis, the laboratory reporting limit for Beryllium exceeded the Performance Standard of 4 ug/L.

## Site Inspection

On April 24, 2006, Steven Bath and Mark Harvison, with the US Army Corps of Engineers, Savannah District, traveled to Cedartown to inspect the site. Mr. Wayne Short an employee of the City of Cedartown showed us around the landfill. Mr. Short has been associated with the landfill throughout the remediation. Most of the areas inspected were over grown with weeds, woody vegetation, and/or small trees. These conditions can be seen in some of the photos attached to this report. The areas with heavier vegetation were difficult to inspect for deficiencies such as cracks or depressions. Typically, landfill cover maintenance includes periodic cutting of vegetation and control of erosion. In areas that were more visible for inspections, the cap appeared to be in good condition. One area of significant erosion was observed but no waste was exposed and it could not be determined if it was an area where waste had been buried. Most of the monitoring wells could not be located due to the dense vegetation at the site. There were no indications of any other problems at the site. The Site Inspection Checklist is included as Attachment D. Site Photographs are included in Attachment E.

## Interviews

On April 24, 2006, Steven Bath and Mark Harvison, conducted a interview with Mr. James L. Stephens, Cedartown City Manager. Mr. Stephens has been the City Manager for a little over a year so he was not involved with any of the remedial action at the site. He was aware of the site but had never heard of any citizen concerns with the remediation of the site nor had he ever heard the site even mentioned by any citizens of Polk County.

On April 24, 2006, Steven Bath and Mark Harvison, conducted an interview with Mr. Wayne Short of the Cedartown Utilities Department. Mr. Short has worked closely with the site ever since it was placed on the NPL. Mr. Short explained that the City has not

been conducting any maintenance at the site and that the site has not been sampled since it was deleted from the NPL. Mr. Short was not aware of any problems at the site or of any public concerns.

On May 12, 2006, Ms. Antonia Beavers with Georgia EPD was contacted about the site. Ms. Beavers provides State regulatory oversight of the project. Ms Beavers stated that Georgia EPD does not have any concerns or issues with the way the remedy has been implemented at the site. Ms Beavers agreed that the site needs to be sampled as part of the Five-Year Review. Ms. Beavers also stated that she is not aware of any public concerns over the site.

## VII. Technical Assessment

### Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, historic and recent analytical data and site inspections indicate the remedy is functioning as intended by the ROD. There have been no operation and maintenance activities at the site. Without landfill cover maintenance, the effectiveness of the remedy will most likely diminish over time. There are no O&M costs that would indicate any difficulties with the remedy. There are no opportunities for optimization of the remedy. Some perimeter monitoring wells have been damaged and can no longer be sampled. These wells were cross gradient to the site, do not affect the assessment of the remedy, and need not be replaced. Access controls were not required by the ROD or ROD Amendment. Institutional controls are in place at the site to prevent ground-water usage and drilling resulting in exposure to ground-water contaminants. There is no evidence of violations of the institutional controls. Copies of the institutional controls are included as Attachment F.

| <b>Checklist for question A: Is the remedy functioning as intended by the decision documents?</b> |   |
|---|---|
| <b>Remedial Action Performance</b>  |   |
| Yes   | Does the remedial action continue to operate and function as designed?  |
| Yes   | Is the remedial action performing as expected and are cleanup levels being achieved?                                    |
| Yes   | Is containment effective?   |
| <b>System Operations /O&amp;M</b>   |   |
| No  | Will operating procedures as implemented maintain the effectiveness of response actions?                                |
| None  | Are there large variances in O&M cost that could indicate a potential remedy problem or remedy issue?                   |
| <b>Opportunities for Optimization</b>   |   |
| No  | Do opportunities exist to improve the performance and/or reduce the cost of monitoring sampling, and treatment systems? |
| <b>Early indicators of Potential Issues</b>   |   |
| None  | Do frequent equipment changes or breakdown indicate a potential problem?  |
| No  | Do issues or problems place protectiveness at risk?   |
| <b>Implementation of Institutional Controls and Other Measures</b>                                |   |
| Not Required  | Are access controls in place to prevent exposure?   |
| Yes   | Are institutional controls in place to prevent exposure?  |
| None  | Are other actions necessary to ensure that immediate threats have been addressed?                                       |

Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

No standards identified in the ROD or TBCs used in selecting cleanup levels have changed to call into question the protectiveness of the remedy. There have been no changes in the site or surrounding properties that would affect the protectiveness of the remedy. No new contaminants or contaminant sources have been identified on the site. There have been no changes in contaminant characteristics or toxicity factors. Standardized risk assessment methodologies have not changed in any way that would affect the protectiveness of the remedy. The remedy as described in the ROD and ROD Amendment is progressing as expected.

A comparison of current standards against those listed in the RODs was performed. The following table presents the ROD standards and current standards for comparison.

**Table: 4 Changes in ARARS**

| CHANGES IN CHEMICAL-SPECIFIC STANDARDS |   |                          |                           |                      |
|--|---|--------------------------|---------------------------|----------------------|
| COC                                    | Standard as Stated in ROD                               | Current Federal MCL      | Current Georgia State MCL | Changes in Standards |
| Manganese <sup>1</sup>                 | Original RBC-175 ppb<br>Revised in 1995<br>RBC- 840 ppb | 50 ug/L<br>secondary MCL | 50 ppb                    | PRG-880 ppb          |
| Beryllium                              | Fed MCL – 4 ppb   | 4 ppb                    | 4 ppb                     | None                 |
| Cadmium                                | Fed MCL – 5 ppb   | 5 ppb                    | 5 ppb                     | None                 |
| Chromium                               | Fed MCL – 100 ppb                                       | 100 ppb                  | 100 ppb                   | None                 |
| Lead                                   | EPA Action Level – 15 ppb                               | Action Level =<br>15 ppb | 15 ppb                    | None                 |

<sup>1</sup> – The Risk Based Concentration (RBC) for Manganese was changed as the result of a revision to the established Reference Dose. In November 1995, EPA changed the Performance Standard for Manganese for the Cedartown Municipal Landfill to 840 ppb. Currently the risk based Preliminary Remediation Goal (PRG) for Manganese as calculated by EPA is 880 ppb.

Based on the current status of the Site, no changes were discovered between the original ARARs cited in the Record of Decision and the current statutes and regulations that would apply to the remedial action. This applied to both the chemical-specific ARARs and to the location-specific ARARs. Although concentrations of Manganese repeatedly exceed the performance standards, they are within the range of naturally occurring Manganese near the site.

The new Arsenic MCL, 10 ppb, is significantly lower than it was at the time the ROD was signed. During the RI, Arsenic was detected in leachate slightly above 10 ppb. Leachate well LW-6 contained Arsenic at 19 ug/L and leachate well LW-2 contained Arsenic at 12 ug/L. Both of these wells are within the boundaries of the landfill. The leachate wells are not considered compliance points and therefore, are not required by the ROD to meet the performance standards. The RI also reported Arsenic above 10 ppb in two bedrock monitoring wells. Arsenic was detected in OW-4 at 12 ug/L and in OW-5 at 18 ug/L. Ground-water contours developed for the site have historically shown OW-5 to be cross-gradient to the landfill. This indicates the Arsenic is most likely not related to landfill activities. Soil samples collected from the installation of these wells were used to develop the background Arsenic concentration of 17.7 mg/Kg. This provides further evidence to the argument that the Arsenic in these wells is naturally occurring and is not affecting the protectiveness at the site.

| <b>Checklist for question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of the remedy selection still valid?</b> |   |
|--|---|
| <b>Changes in Standards and TBCs</b>   |   |
| No   | Have standards identified in the ROD been revised to call into question the protectiveness of the remedy?   |
| No   | Do newly promulgated standards call into question the protectiveness of the remedy?   |
| No   | Have TBCs used in selecting cleanup levels at the site changed to affect the protectiveness of the remedy?  |
| <b>Change in Exposure Pathways</b>   |   |
| No   | Has land use or expected land use on or near the site changed?  |
| No   | Have human health or ecological routes of exposure or receptors been newly identified or changed in a way that could affect the protectiveness of the remedy? |
| No   | Are there any newly identified contaminants or contaminant sources?   |
| No   | Are there any unanticipated toxic byproducts of the remedy not previously addressed by the decision documents?  |
| No   | Have physical site conditions or the understanding of these conditions changed in a way that could affect the protectiveness of the remedy?                   |
| <b>Change in Toxicity and Other Contaminant Characteristics</b>  |   |
| No   | Have toxicity factors for contaminants of concern at the site changed in a way that could affect the protectiveness of the remedy?                            |
| No   | Have other contaminant characteristics changed that could affect the protectiveness of the remedy?  |
| <b>Changes in Risk Assessment Methods</b>  |   |
| No   | Have standardized risk assessment methods changed in a way that could affect the protectiveness of the remedy?  |
| <b>Expected Progress Towards meeting RAOs</b>  |   |
| Yes  | Is the remedy progressing as expected?  |



Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No additional information has been identified that would call into question the protectiveness of the remedy. Some internal monitoring wells were destroyed by falling trees. These wells were monitored for informational purposes only and the data was not included in the analysis for performance standard compliance.

| <b>Checklist for question C: Has any other information come to light that could call into question the protectiveness of the remedy?</b> |   |
|--|---|
| <b>Other Information</b>   |   |
| No   | Have newly identified ecological risk been found?   |
| No   | Are there any impacts from natural disasters?   |
| No   | Has any other information come to light that could affect the protectiveness of the remedy? |

Technical Assessment Summary

All remedies have been constructed for the site. The site was deleted from the NPL on March 10, 1999. Since that time, there has been no maintenance performed on the landfill cover nor has the landfill cover been inspected. Without landfill cover maintenance, the effectiveness of the remedy will most likely diminish over time. Some perimeter monitoring wells have been damaged and can no longer be sampled. These wells were cross gradient to the site and do not affect the assessment of the remedy. Access controls were not required by the ROD or ROD Amendment. Institutional controls are in place at the site to prevent ground-water usage and drilling resulting in exposure to ground-water contaminants.

No standards identified in the ROD or TBCs used in selecting cleanup levels have changed to call into question the protectiveness of the remedy. There have been no changes in the site or surrounding properties that would affect the protectiveness of the remedy. No new contaminants or contaminant sources have been identified on the site. There have been no changes in contaminant characteristics or toxicity factors. Standardized risk assessment methodologies have not changed in any way that would affect the protectiveness of the remedy. The remedy as described in the ROD and ESD is progressing as expected.

No additional information has been identified that would call into question the protectiveness of the remedy.

## VIII. Issues

| Issue  | Currently Affects<br>Protectiveness<br>(Y/N) | Affects Future<br>Protectiveness<br>(Y/N) |
|--|--|---|
| Landfill cover has not been inspected or maintained. | No   | Yes                                       |

## IX. Recommendations and Follow-up Actions

| Recommendation/ Follow-Up<br>Actions                   | Party<br>Responsible | Oversight<br>Agency | Milestone Date | Affects Protectiveness<br>(Y/N) |        |
|--|----------------------|---------------------|----------------|---------------------------------|--------|
|  |                      |                     |                | Current                         | Future |
| Inspect and maintain the landfill cover semi-annually. | PRP                  | EPA                 | June 30, 2007  | No                              | Yes    |

## X. Protectiveness Statement

The remedy is considered protective over the short-term and there is no evidence of exposure. However, to ensure that the remedy remains protective over the long-term, the landfill cover must be inspected semi-annually and maintained by the City of Cedartown.

## XI. Next Review

The next Five-Year Review for the Cedartown Municipal Landfill Site is required to be completed within five years of the approval date of this review.

**Attachment A**  
**Documents Reviewed**

Conestoga-Rovers & Associates Limited, Cedartown Municipal Landfill Site Group's Comments- Proposed Plan, Cedartown Municipal Landfill Site, Cedartown, Georgia, 29 September 1993.

Conestoga-Rovers & Associates Limited, Feasibility Study (FS) Report, Cedartown Municipal Landfill Site, Cedartown, Georgia, August 1993.

Conestoga-Rovers & Associates Limited, Tenth Round Groundwater Analytical Data, Cedartown Municipal Landfill Site, Cedartown, Georgia, 3 November 1997.

Conestoga-Rovers & Associates Limited, Remedial Action Report, Cedartown Municipal Landfill Site, Cedartown, Georgia, February 1998.

Conestoga-Rovers & Associates Limited, Two-Year Evaluation Report, Cedartown Municipal Landfill Site, Cedartown, Georgia, December 1996.

NUS Corporation, Cedartown Landfill Expanded Site Investigation, 15 August 1989.

US Environmental Protection Agency, Region IV, Five-Year Review Report, Cedartown Municipal Landfill Site, 27 September 2001.

US Environmental Protection Agency, Region IV, EPA Superfund Record of Decision, Cedartown Municipal Landfill Site, Cedartown, GA, 2 November 1993.

US Environmental Protection Agency, Region IV, EPA Superfund Record of Decision Amendment, Cedartown Municipal Landfill Site, Cedartown, GA, 12 May 1998.

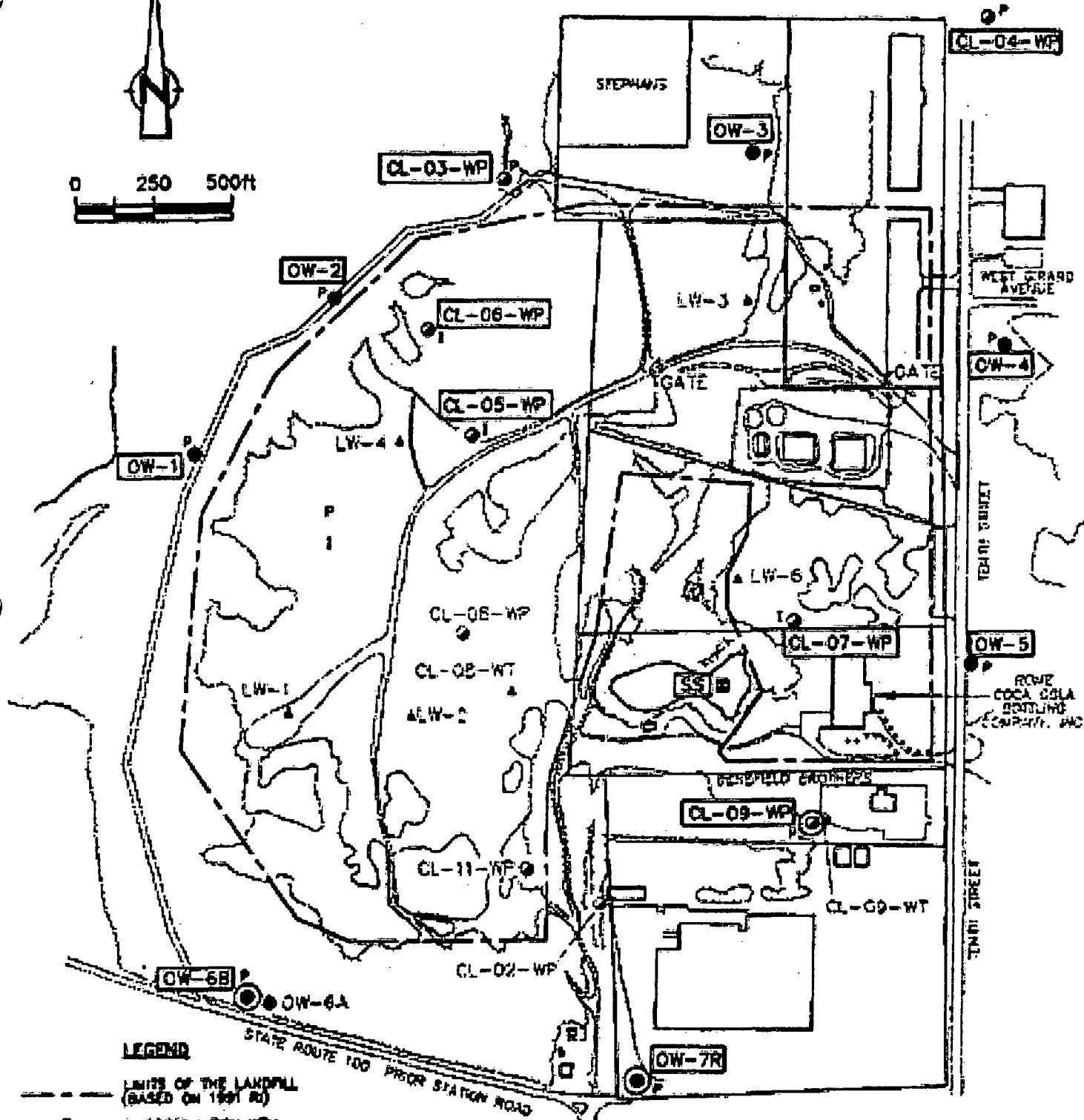
NUS Corporation Correspondence with EPA, Numerous Subjects and dates

Numerous other letters, memoranda, and reports provided by EPA, Region IV personnel, especially Mr. Jay Bassett, Ms Annie Godfrey, and Ms Kay Wischkaemper.

**Attachment B**  
**Site Map**



0 250 500ft



**LEGEND**

--- LIMITS OF THE LANDFILL (BASED ON 1991 RD)

● RW OBSERVATION WELL

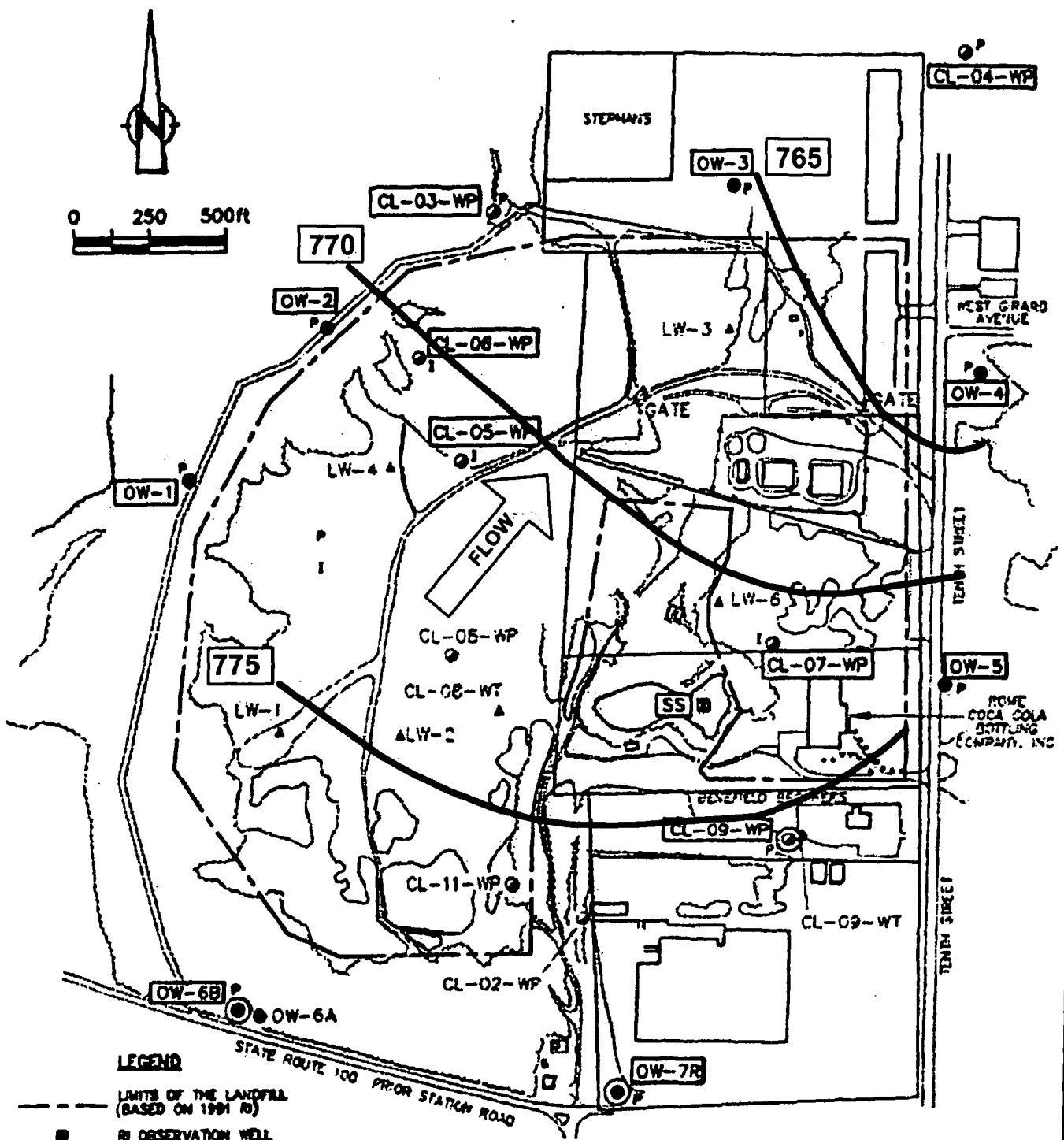
▲ LEACHATE WELL

○ MWS OBSERVATION WELL

SS □ SURFACE WATER SAMPLE

Cedartown Municipal Landfill

Site Map

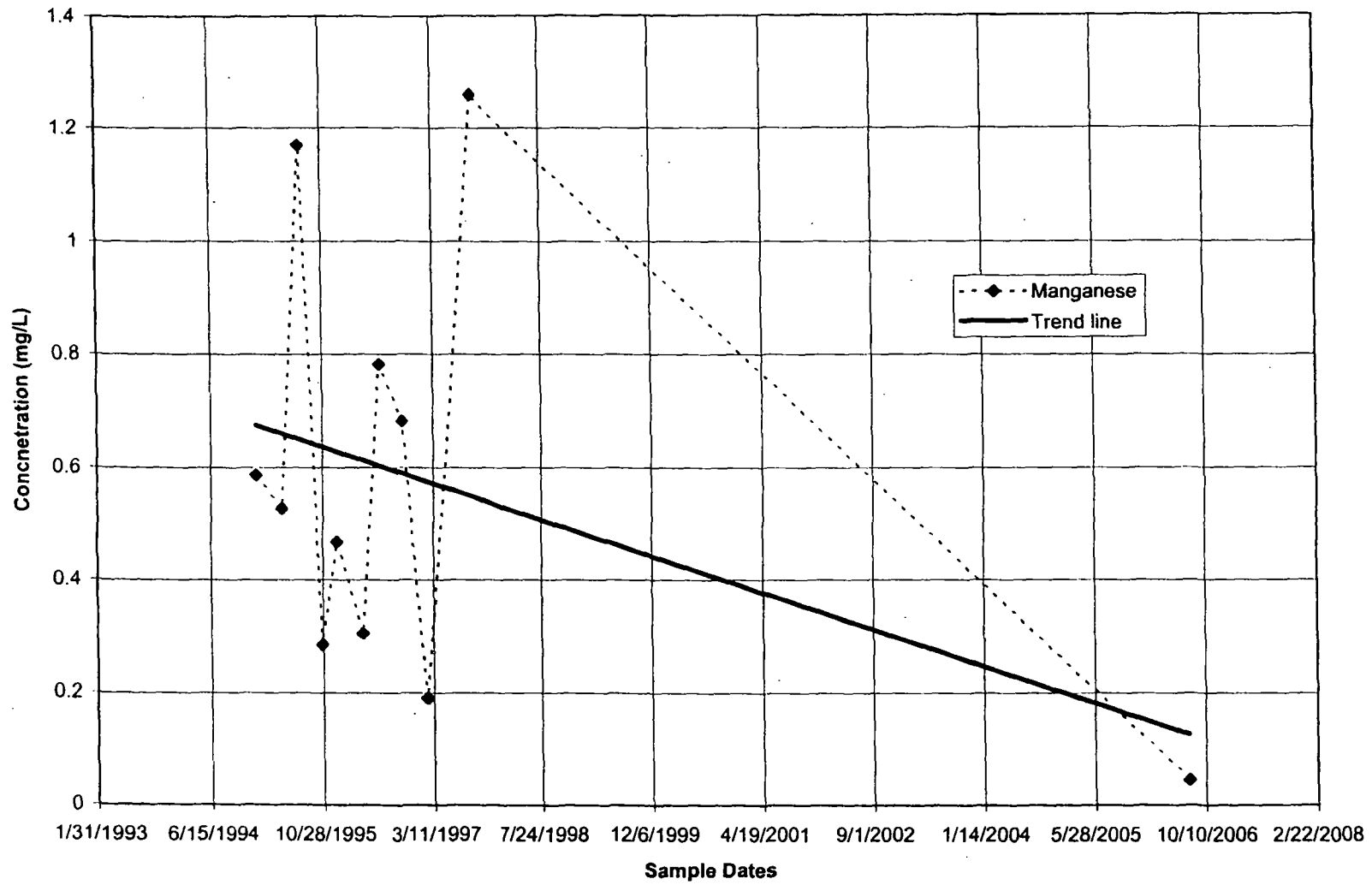


Cedartown Municipal Landfill  
Bedrock Ground-Water  
Contours

July 2006

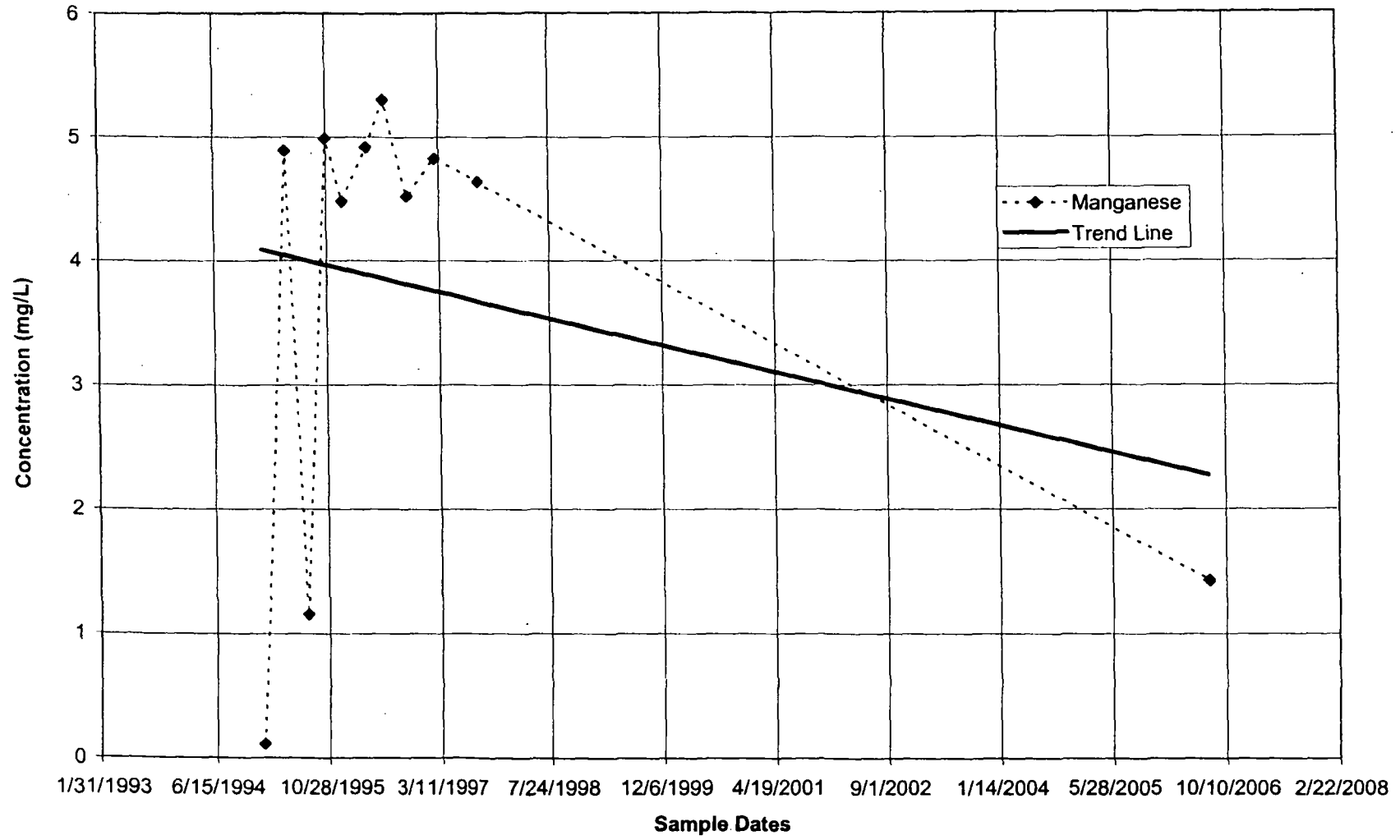
**Attachment C**  
**Ground-Water Data Graphs**

# Manganese OW-2

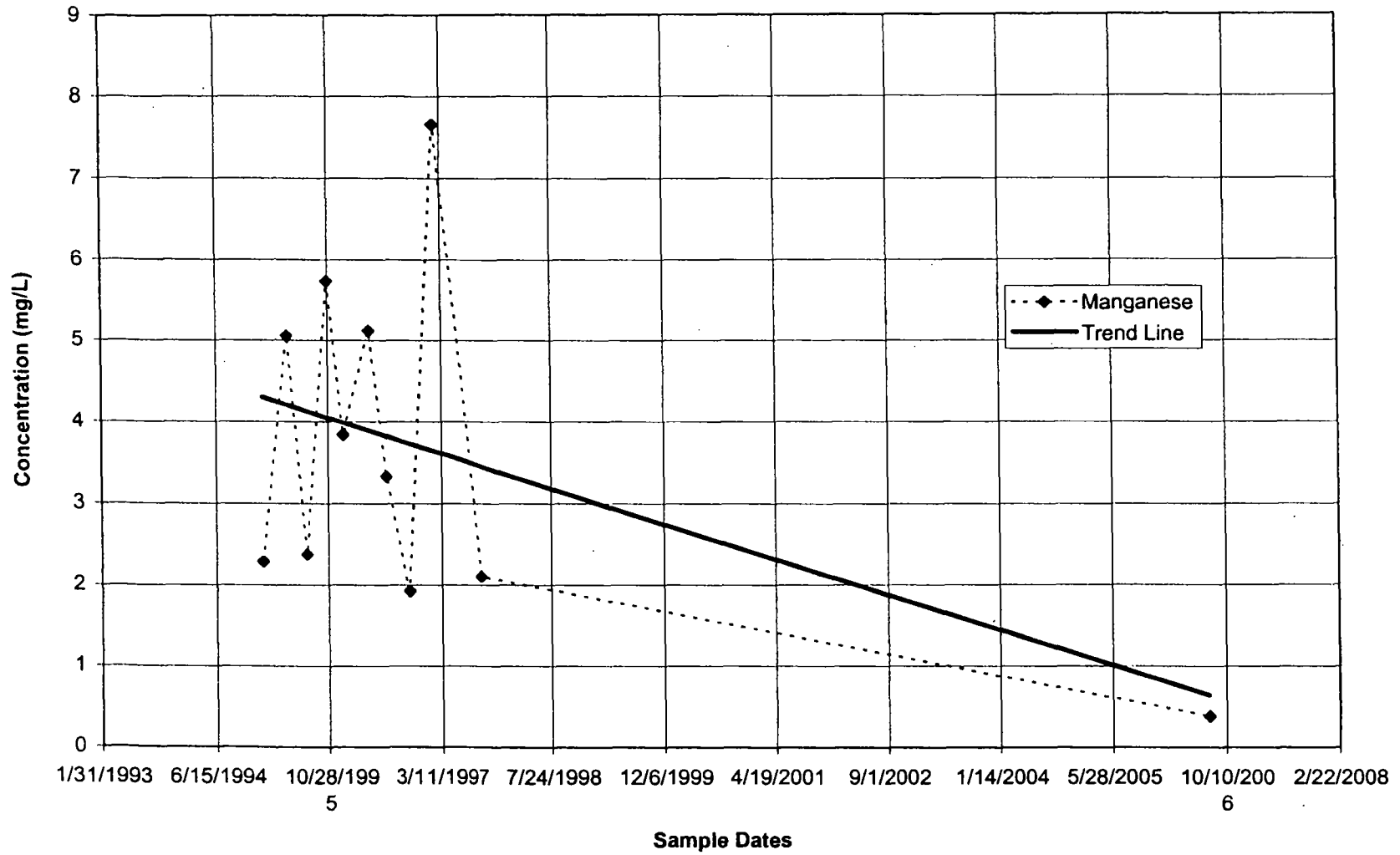




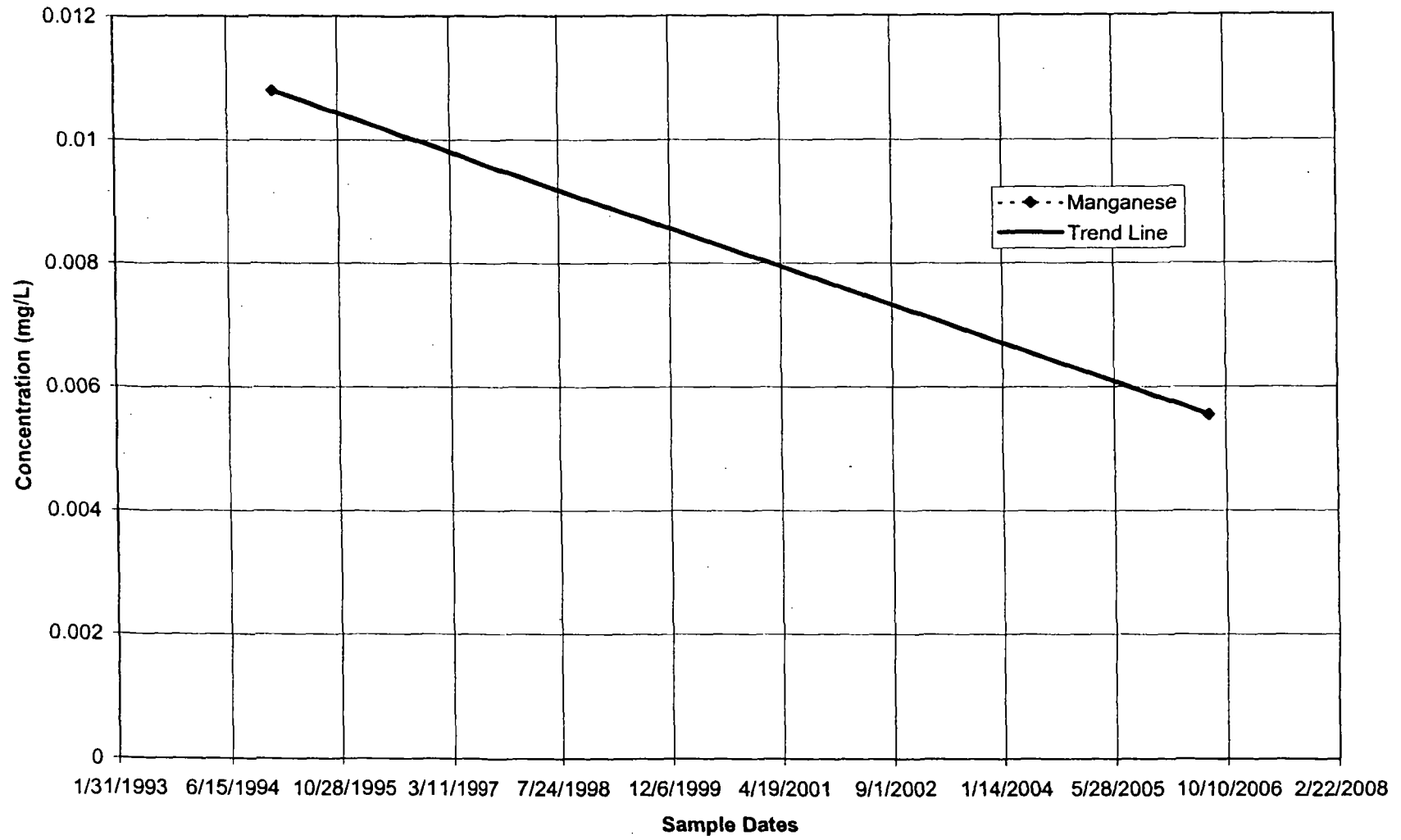
### Manganese OW-3



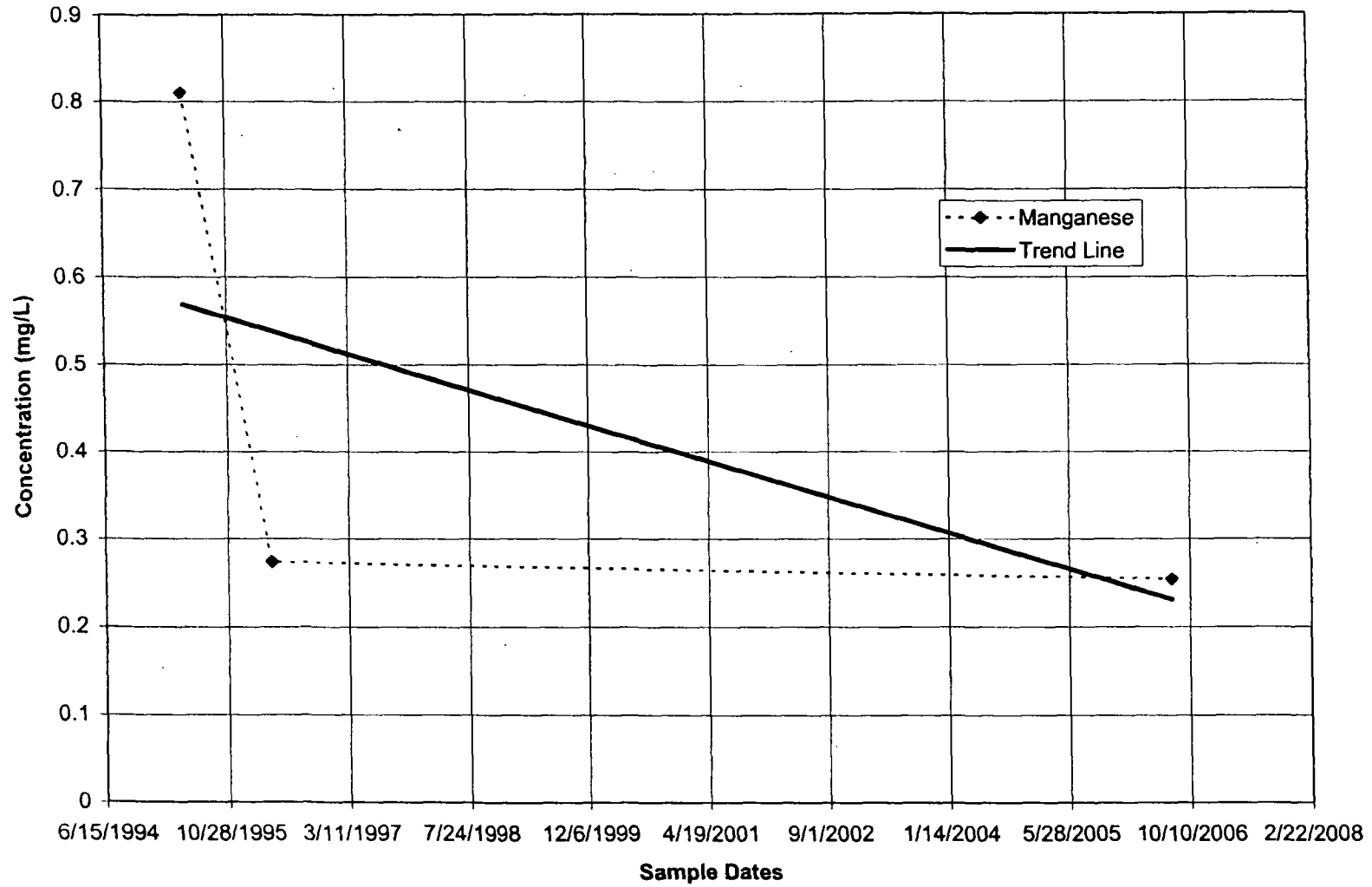
# Manganese OW-4



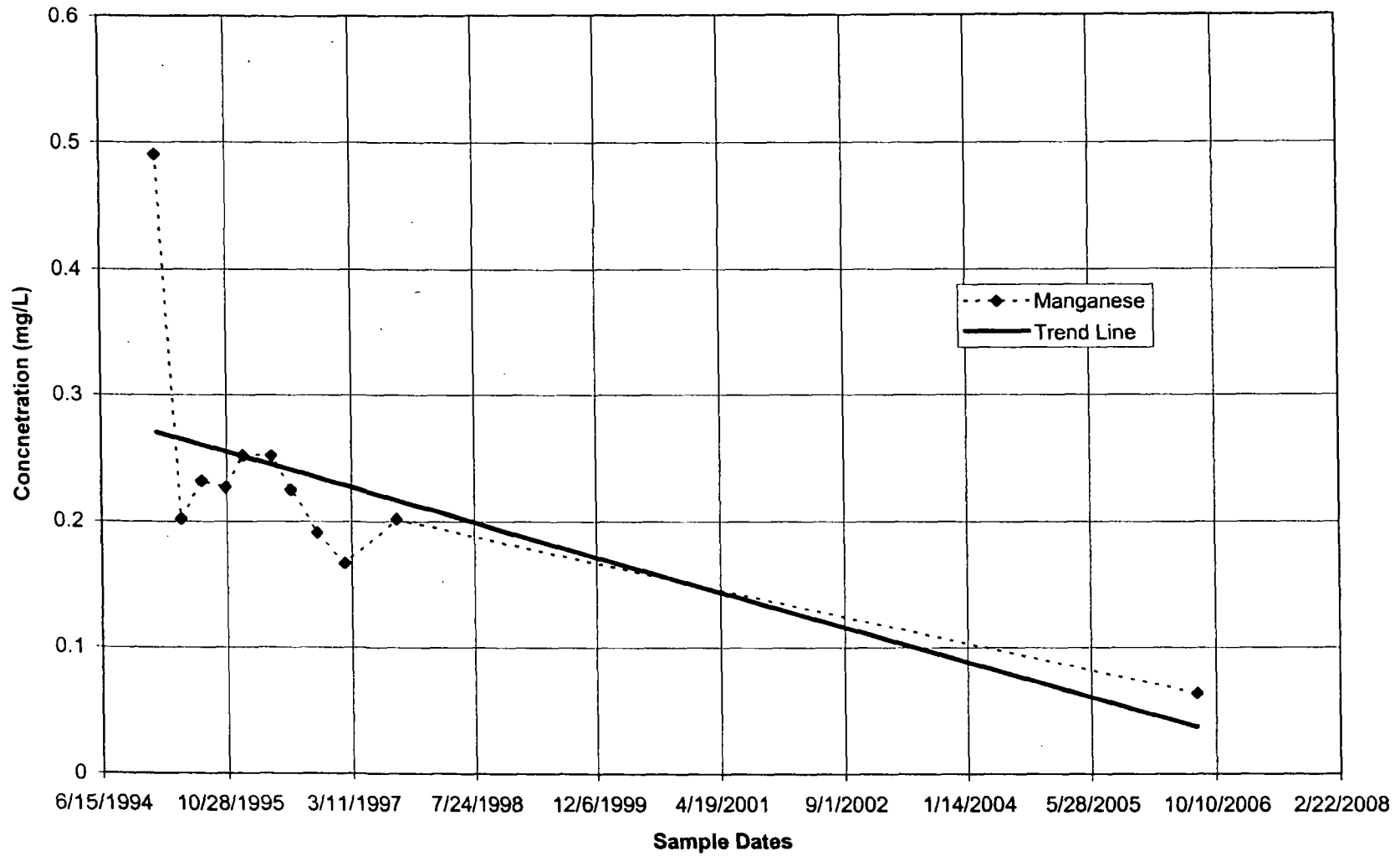
### Manganese OW-5



# Manganese CL-07-WP



# Manganese OW-7R



**Attachment D**  
**Site Inspection Checklist**

## Site Inspection Checklist

| I. SITE INFORMATION  |  |
|--|--|
| Site name: <b>Cedartown Municipal Landfill Site</b>  | Date of inspection: <b>24 April 2006</b>   |
| Location and Region: <b>Cedartown, Polk County, GA</b>   | EPA ID: <b>GAD 980495402</b>               |
| Agency, office, or company leading the five-year review: <b>EPA</b>  | Weather/temperature: <b>Sunny and warm</b> |
| <b>Remedy Includes:</b> (Check all that apply) <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> <b>Landfill cover/containment</b><br/>             Access controls<br/> <input checked="" type="checkbox"/> <b>Institutional controls</b><br/>             Groundwater pump and treatment<br/>             Surface water collection and treatment<br/>             Other _____           </div> <div style="width: 45%;">             Monitored natural attenuation<br/>             Groundwater containment<br/>             Vertical barrier walls           </div> </div>  |  |
| <b>Attachments:</b> Inspection team roster attached <b>see report</b> Site map attached <b>see report</b>  |  |
| II. INTERVIEWS (Check all that apply)  |  |
| <div style="display: flex; justify-content: space-between;"> <div>1. O&amp;M site manager</div> <div><u><b>James L. Stephens</b></u></div> <div><u><b>City Manager, Cedartown, GA</b></u></div> <div><u><b>24 April 2006</b></u></div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Name</div> <div>Title</div> <div>Date</div> </div> <p>Interviewed    at site <input checked="" type="checkbox"/> at office    by phone    Phone no. _____</p> <p>Problems, suggestions;    Report attached    <u>Not aware of any community concerns with the Site. He has only been in his job a little over a year and has no history with the site. See Five -Year Review Report</u></p> |  |
| <div style="display: flex; justify-content: space-between;"> <div>2. O&amp;M staff</div> <div><u><b>Wayne Short</b></u></div> <div><u><b>City Water Department Employee</b></u></div> <div><u><b>24 April 2006</b></u></div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Name</div> <div>Title</div> <div>Date</div> </div> <p>Interviewed    <input checked="" type="checkbox"/> at site    at office    by phone    Phone no. _____</p> <p>Problems, suggestions;    Report attached    <u>Not aware of any community concerns with the Site. See Five -Year Review Report</u></p>   |  |

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Georgia Environmental Protection Division  
Contact Regina Campbell Project Manager 5 Jan 06 404-656-3851  
Name Title Date Phone no.

Problems; suggestions; Report attached No issues with operation of the remedy. The State is concerned that the ground water monitoring has not occurred to evaluate the protectiveness of the remedy. The State is not aware of any serious public concerns over the site.

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.

Problems; suggestions; Report attached \_\_\_\_\_

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.

Problems; suggestions; Report attached \_\_\_\_\_

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.

Problems; suggestions; Report attached \_\_\_\_\_

4. **Other interviews (optional)** Report attached.

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| III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply) |   |                   |            |   |
|--|---|-------------------|------------|---|
| 1.   | <b>O&amp;M Documents</b>                            |                   |            |   |
|  | O&M manual  | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | As-built drawings                                   | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Maintenance logs                                    | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks <u>No documents are maintained on site.</u> |                   |            |   |
| 2.   | <b>Site-Specific Health and Safety Plan</b>         | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Contingency plan/emergency response plan            | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |
| 3.   | <b>O&amp;M and OSHA Training Records</b>            | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |
| 4.   | <b>Permits and Service Agreements</b>               |                   |            |   |
|  | Air discharge permit                                | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Effluent discharge                                  | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Waste disposal, POTW                                | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Other permits _____                                 | Readily available | Up to date | N/A                                     |
|  | Remarks _____                                       |                   |            |   |
| 5.   | <b>Gas Generation Records</b>                       | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |
| 6.   | <b>Settlement Monument Records</b>                  | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |
| 7.   | <b>Groundwater Monitoring Records</b>               | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |
| 8.   | <b>Leachate Extraction Records</b>                  | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |
| 9.   | <b>Discharge Compliance Records</b>                 |                   |            |   |
|  | Air   | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Water (effluent)                                    | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |
| 10.  | <b>Daily Access/Security Logs</b>                   | Readily available | Up to date | <input checked="" type="checkbox"/> N/A |
|  | Remarks _____                                       |                   |            |   |

| IV. O&M COSTS   |   |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
|---|---|----|------|------------|--------------------|----|------|------|--------------------|--|------|--|------|------------|--|------|------|----|------|------|--------------------|--|------|--|------|------------|--|------|------|----|------|------|--------------------|--|------|--|------|------------|--|------|------|----|------|------|--------------------|--|------|--|------|------------|--|------|------|----|------|------|--------------------|--|------|--|------|------------|--|
| 1.  | <b>O&amp;M Organization</b><br>State in-house _____ Contractor for State<br><b>X PRP in-house</b> _____ Contractor for PRP<br>Federal Facility in-house _____ Contractor for Federal Facility<br>Other _____  |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| 2.  | <b>O&amp;M Cost Records</b><br>Readily available _____ Up to date _____<br>Funding mechanism/agreement in place _____<br>Original O&M cost estimate _____ None _____ Breakdown attached _____<br><br><p style="text-align: center;">Total annual cost by year for review period if available</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">From</td> <td style="width: 15%; text-align: center;">2001</td> <td style="width: 10%;">To</td> <td style="width: 15%; text-align: center;">2002</td> <td style="width: 15%; text-align: center;">\$ 0</td> <td style="width: 30%;">Breakdown attached</td> </tr> <tr> <td></td> <td style="text-align: center;">Date</td> <td></td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From</td> <td style="text-align: center;">2002</td> <td>To</td> <td style="text-align: center;">2003</td> <td style="text-align: center;">\$ 0</td> <td>Breakdown attached</td> </tr> <tr> <td></td> <td style="text-align: center;">Date</td> <td></td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From</td> <td style="text-align: center;">2003</td> <td>To</td> <td style="text-align: center;">2004</td> <td style="text-align: center;">\$ 0</td> <td>Breakdown attached</td> </tr> <tr> <td></td> <td style="text-align: center;">Date</td> <td></td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From</td> <td style="text-align: center;">2004</td> <td>To</td> <td style="text-align: center;">2005</td> <td style="text-align: center;">\$ 0</td> <td>Breakdown attached</td> </tr> <tr> <td></td> <td style="text-align: center;">Date</td> <td></td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From</td> <td style="text-align: center;">2005</td> <td>To</td> <td style="text-align: center;">2006</td> <td style="text-align: center;">\$ 0</td> <td>Breakdown attached</td> </tr> <tr> <td></td> <td style="text-align: center;">Date</td> <td></td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> </table> |    |      | From       | 2001               | To | 2002 | \$ 0 | Breakdown attached |  | Date |  | Date | Total cost |  | From | 2002 | To | 2003 | \$ 0 | Breakdown attached |  | Date |  | Date | Total cost |  | From | 2003 | To | 2004 | \$ 0 | Breakdown attached |  | Date |  | Date | Total cost |  | From | 2004 | To | 2005 | \$ 0 | Breakdown attached |  | Date |  | Date | Total cost |  | From | 2005 | To | 2006 | \$ 0 | Breakdown attached |  | Date |  | Date | Total cost |  |
| From  | 2001  | To | 2002 | \$ 0       | Breakdown attached |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
|   | Date  |    | Date | Total cost |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| From  | 2002  | To | 2003 | \$ 0       | Breakdown attached |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
|   | Date  |    | Date | Total cost |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| From  | 2003  | To | 2004 | \$ 0       | Breakdown attached |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
|   | Date  |    | Date | Total cost |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| From  | 2004  | To | 2005 | \$ 0       | Breakdown attached |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
|   | Date  |    | Date | Total cost |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| From  | 2005  | To | 2006 | \$ 0       | Breakdown attached |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
|   | Date  |    | Date | Total cost |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| 3.  | <b>Unanticipated or Unusually High O&amp;M Costs During Review Period</b><br>Describe costs and reasons: <u>There has been no O&amp;M associated with the site.</u><br>_____<br>_____<br>_____<br>_____   |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| V. ACCESS AND INSTITUTIONAL CONTROLS    X Applicable    N/A |   |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| <b>A. Fencing</b>   |   |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| 1.  | <b>Fencing damaged</b> _____ Location shown on site map _____ <b>X Gates secured</b> _____ N/A<br>Remarks <u>Access to the site is limited but not restricted.</u>  |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| <b>B. Other Access Restrictions</b>                         |   |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |
| 1.  | <b>Signs and other security measures</b> _____ Location shown on site map _____ <b>X N/A</b><br>Remarks <u>The main entrance to the site is restricted by access through the city public works maintenance facility.</u>  |    |      |            |                    |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |      |      |    |      |      |                    |  |      |  |      |            |  |

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| <b>C. Institutional Controls (ICs)</b> |  |  |  |  |
| 1.                                     | <b>Implementation and enforcement</b>                                      |  |  |  |
|  | Site conditions imply ICs not properly implemented                         | Yes  | <input checked="" type="checkbox"/> No                   | N/A  |
|  | Site conditions imply ICs not being fully enforced                         | Yes  | <input checked="" type="checkbox"/> No                   | N/A  |
|  | Type of monitoring (e.g., self-reporting, drive by) _____                  |  |  |  |
|  | Frequency _____  |  |  |  |
|  | Responsible party/agency _____   |  |  |  |
|  | Contact _____  |  |  |  |
|  | Name   | Title  | Date   | Phone no.                                  |
|  | Reporting is up-to-date  |  | Yes  | No <input checked="" type="checkbox"/> N/A |
|  | Reports are verified by the lead agency                                    |  | Yes  | No <input checked="" type="checkbox"/> N/A |
|  | Specific requirements in deed or decision documents have been met          |  | Yes  | No <input checked="" type="checkbox"/> N/A |
|  | Violations have been reported  |  | Yes  | No <input checked="" type="checkbox"/> N/A |
|  | Other problems or suggestions:      Report attached                        |  |  |  |
|  | _____  |  |  |  |
|  | _____  |  |  |  |
|  | _____  |  |  |  |
| 2.                                     | <b>Adequacy</b>  | <input checked="" type="checkbox"/> ICs are adequate           | ICs are inadequate                                       | N/A  |
|  | Remarks <u>ICs to restrict ground-water have been in place since 1996.</u> |  |  |  |
|  | _____  |  |  |  |
|  | _____  |  |  |  |
| <b>D. General</b>                      |  |  |  |  |
| 1.                                     | <b>Vandalism/trespassing</b>   | Location shown on site map                                     | <input checked="" type="checkbox"/> No vandalism evident |  |
|  | Remarks _____  |  |  |  |
|  | _____  |  |  |  |
| 2.                                     | <b>Land use changes on site</b>  | <input checked="" type="checkbox"/> N/A                        |  |  |
|  | Remarks _____  |  |  |  |
|  | _____  |  |  |  |
| 3.                                     | <b>Land use changes off site</b>   | <input checked="" type="checkbox"/> N/A                        |  |  |
|  | Remarks <u>Adjacent land is an industrial park.</u>                        |  |  |  |
|  | _____  |  |  |  |
|  | _____  |  |  |  |
| <b>VI. GENERAL SITE CONDITIONS</b>     |  |  |  |  |
| <b>A. Roads</b>                        |  | <input checked="" type="checkbox"/> Applicable                 | N/A  |  |
| 1.                                     | <b>Roads damaged</b>   | <input checked="" type="checkbox"/> Location shown on site map | <input checked="" type="checkbox"/> Roads adequate       | N/A  |
|  | Remarks _____  |  |  |  |
|  | _____  |  |  |  |

|  |   |   |  |
|--|---|---|--|
| <b>B. Other Site Conditions</b>  |   |   |  |
| Remarks <u>Site was extremely overgrown and the cover is not being maintained.</u> |   |   |  |
|  |   |   |  |
|  |   |   |  |
|  |   |   |  |
|  |   |   |  |
|  |   |   |  |
| <b>VII. LANDFILL COVERS</b> <input checked="" type="checkbox"/> Applicable    N/A  |   |   |  |
| <b>A. Landfill Surface</b>   |   |   |  |
| 1.   | <b>Settlement</b> (Low spots)<br>Areal extent _____<br>Remarks _____  | Location shown on site map _____<br>Depth _____               | <input checked="" type="checkbox"/> Settlement not evident |
| 2.   | <b>Cracks</b><br>Lengths _____<br>Remarks _____   | Location shown on site map _____<br>Widths _____ Depths _____ | <input checked="" type="checkbox"/> Cracking not evident   |
| 3.   | <b>Erosion</b><br>Areal extent _____<br>Remarks <u>Some areas of erosion were visible but it is impossible to tell if these areas were part of the landfill cover.</u>  | Location shown on site map _____<br>Depth _____               | Erosion not evident  |
| 4.   | <b>Holes</b><br>Areal extent _____<br>Remarks _____   | Location shown on site map _____<br>Depth _____               | <input checked="" type="checkbox"/> Holes not evident      |
| 5.   | <b>Vegetative Cover</b> <input checked="" type="checkbox"/> Grass    Cover properly established<br>Trees/Shrubs (indicate size and locations on a diagram)<br>Remarks <u>The majority of the site is overgrown with dense vegetation.</u> |   | No signs of stress   |
| 6.   | <b>Alternative Cover</b> (armored rock, concrete, etc.)<br>Remarks _____  | N/A   |  |
| 7.   | <b>Bulges</b><br>Areal extent _____<br>Remarks _____  | Location shown on site map _____<br>Height _____              | <input checked="" type="checkbox"/> Bulges not evident     |

|  |                               |   |
|--|-------------------------------|---|
| 8.   | <b>Wet Areas/Water Damage</b> | <input checked="" type="checkbox"/> Wet areas/water damage not evident                                      |
|  | Wet areas                     | Location shown on site map      Areal extent _____  |
|  | Ponding                       | Location shown on site map      Areal extent _____  |
|  | Seeps                         | Location shown on site map      Areal extent _____  |
|  | Soft subgrade                 | Location shown on site map      Areal extent _____  |
|  | Remarks _____                 |   |
| 9.   | <b>Slope Instability</b>      | Slides      Location shown on site map <input checked="" type="checkbox"/> No evidence of slope instability |
|  | Areal extent _____            |   |
|  | Remarks _____                 |   |
| <b>B. Benches</b>  | Applicable                    | <input checked="" type="checkbox"/> N/A   |
| (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)                                   |                               |   |
| 1.   | <b>Flows Bypass Bench</b>     | Location shown on site map <input checked="" type="checkbox"/> N/A or okay                                  |
|  | Remarks _____                 |   |
| 2.   | <b>Bench Breached</b>         | Location shown on site map <input checked="" type="checkbox"/> N/A or okay                                  |
|  | Remarks _____                 |   |
| 3.   | <b>Bench Overtopped</b>       | Location shown on site map <input checked="" type="checkbox"/> N/A or okay                                  |
|  | Remarks _____                 |   |
| <b>C. Letdown Channels</b>   | Applicable                    | <input checked="" type="checkbox"/> N/A   |
| (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.) |                               |   |
| 1.   | <b>Settlement</b>             | Location shown on site map      No evidence of settlement   |
|  | Areal extent _____            | Depth _____   |
|  | Remarks _____                 |   |
| 2.   | <b>Material Degradation</b>   | Location shown on site map      No evidence of degradation  |
|  | Material type _____           | Areal extent _____  |
|  | Remarks _____                 |   |
| 3.   | <b>Erosion</b>                | Location shown on site map      No evidence of erosion  |
|  | Areal extent _____            | Depth _____   |
|  | Remarks _____                 |   |

|  |   |                            |                                       |
|--|---|----------------------------|---------------------------------------|
| 4.   | <b>Undercutting</b>                                       | Location shown on site map | No evidence of undercutting           |
|  | Areal extent _____  | Depth _____                |                                       |
|  | Remarks _____   |                            |                                       |
| 5.   | <b>Obstructions</b>                                       | Type _____                 | No obstructions                       |
|  | Location shown on site map                                | Areal extent _____         |                                       |
|  | Size _____  |                            |                                       |
|  | Remarks _____   |                            |                                       |
| 6.   | <b>Excessive Vegetative Growth</b>                        | Type _____                 |                                       |
|  | No evidence of excessive growth                           |                            |                                       |
|  | Vegetation in channels does not obstruct flow             |                            |                                       |
|  | Location shown on site map                                | Areal extent _____         |                                       |
|  | Remarks _____   |                            |                                       |
| <b>D. Cover Penetrations</b> Applicable      X N/A |   |                            |                                       |
| 1.   | <b>Gas Vents</b>  | Active      Passive        |                                       |
|  | Properly secured/locked                                   | Functioning                | Routinely sampled      Good condition |
|  | Evidence of leakage at penetration                        |                            | Needs Maintenance                     |
|  | N/A   |                            |                                       |
|  | Remarks _____   |                            |                                       |
| 2.   | <b>Gas Monitoring Probes</b>                              |                            |                                       |
|  | Properly secured/locked G                                 | Functioning                | Routinely sampled      Good condition |
|  | Evidence of leakage at penetration                        |                            | Needs Maintenance      N/A            |
|  | Remarks _____   |                            |                                       |
| 3.   | <b>Monitoring Wells (within surface area of landfill)</b> |                            |                                       |
|  | Properly secured/locked G                                 | Functioning                | Routinely sampled      Good condition |
|  | Evidence of leakage at penetration                        |                            | Needs Maintenance      N/A            |
|  | Remarks _____   |                            |                                       |
| 4.   | <b>Leachate Extraction Wells</b>                          |                            |                                       |
|  | Properly secured/locked G                                 | Functioning                | Routinely sampled      Good condition |
|  | Evidence of leakage at penetration                        |                            | Needs Maintenance      N/A            |
|  | Remarks _____   |                            |                                       |
| 5.   | <b>Settlement Monuments</b>                               | Located                    | Routinely surveyed      N/A           |
|  | Remarks _____   |                            |                                       |

|   |  |            |   |
|---|--|------------|---|
| <b>E. Gas Collection and Treatment</b>  |  | Applicable | <input checked="" type="checkbox"/> N/A |
| 1.                                      | <b>Gas Treatment Facilities</b><br>Flaring      Thermal destruction      Collection for reuse<br>Good condition      Needs Maintenance<br>Remarks _____            |            |   |
| 2.                                      | <b>Gas Collection Wells, Manifolds and Piping</b><br>Good condition      Needs Maintenance<br>Remarks _____  |            |   |
| 3.                                      | <b>Gas Monitoring Facilities</b> ( <i>e.g.</i> , gas monitoring of adjacent homes or buildings)<br>Good condition      Needs Maintenance      N/A<br>Remarks _____ |            |   |
| <b>F. Cover Drainage Layer</b>          |  | Applicable | <input checked="" type="checkbox"/> N/A |
| 1.                                      | <b>Outlet Pipes Inspected</b> Functioning      N/A<br>Remarks _____  |            |   |
| 2.                                      | <b>Outlet Rock Inspected</b> Functioning      N/A<br>Remarks _____   |            |   |
| <b>G. Detention/Sedimentation Ponds</b> |  | Applicable | <input checked="" type="checkbox"/> N/A |
| 1.                                      | <b>Siltation</b> Areal extent _____ Depth _____ N/A<br>Siltation not evident<br>Remarks _____  |            |   |
| 2.                                      | <b>Erosion</b> Areal extent _____ Depth _____<br>Erosion not evident<br>Remarks _____  |            |   |
| 3.                                      | <b>Outlet Works</b> Functioning      N/A<br>Remarks _____  |            |   |
| 4.                                      | <b>Dam</b> Functioning      N/A<br>Remarks _____   |            |   |

|  |   |                            |  |
|--|---|----------------------------|--|
| <b>H. Retaining Walls</b>                      |   | Applicable                 | <input checked="" type="checkbox"/> N/A                |
| 1.   | <b>Deformations</b><br>Horizontal displacement _____<br>Rotational displacement _____<br>Remarks _____                    | Location shown on site map | Deformation not evident<br>Vertical displacement _____ |
| 2.   | <b>Degradation</b><br>Remarks _____   | Location shown on site map | Degradation not evident                                |
| <b>I. Perimeter Ditches/Off-Site Discharge</b> |   | Applicable                 | <input checked="" type="checkbox"/> N/A                |
| 1.   | <b>Siltation</b><br>Areal extent _____<br>Remarks _____   | Location shown on site map | Siltation not evident<br>Depth _____                   |
| 2.   | <b>Vegetative Growth</b><br>Vegetation does not impede flow<br>Areal extent _____<br>Remarks _____                        | Location shown on site map | N/A<br>Type _____                                      |
| 3.   | <b>Erosion</b><br>Areal extent _____<br>Remarks _____   | Location shown on site map | Erosion not evident<br>Depth _____                     |
| 4.   | <b>Discharge Structure</b><br>Remarks _____   | Functioning                | N/A  |
| <b>VIII. VERTICAL BARRIER WALLS</b>            |   | Applicable                 | <input checked="" type="checkbox"/> N/A                |
| 1.   | <b>Settlement</b><br>Areal extent _____<br>Remarks _____  | Location shown on site map | Settlement not evident<br>Depth _____                  |
| 2.   | <b>Performance Monitoring</b><br>Performance not monitored<br>Frequency _____<br>Head differential _____<br>Remarks _____ | Type of monitoring _____   | Evidence of breaching                                  |



| C. Treatment System       |  | Applicable | <input checked="" type="checkbox"/> N/A |
|---------------------------|--|------------|---|
| 1.                        | <b>Treatment Train</b> (Check components that apply)<br>Metals removal                      Oil/water separation                      Bioremediation<br>Air stripping                              Carbon adsorbers<br>Filters _____<br>Additive (e.g., chelation agent, flocculent) _____<br>Others _____<br>Good condition                      Needs Maintenance<br>Sampling ports properly marked and functional<br>Sampling/maintenance log displayed and up to date<br>Equipment properly identified<br>Quantity of groundwater treated annually _____<br>Quantity of surface water treated annually _____<br>Remarks _____<br>_____ |            |   |
| 2.                        | <b>Electrical Enclosures and Panels</b> (properly rated and functional)<br>N/A                      Good condition                      Needs Maintenance<br>Remarks _____<br>_____  |            |   |
| 3.                        | <b>Tanks, Vaults, Storage Vessels</b><br>N/A                      Good condition                      Proper secondary containment                      Needs Maintenance<br>Remarks _____<br>_____  |            |   |
| 4.                        | <b>Discharge Structure and Appurtenances</b><br>N/A                      Good condition                      Needs Maintenance<br>Remarks _____<br>_____   |            |   |
| 5.                        | <b>Treatment Building(s)</b><br>N/A                      Good condition (esp. roof and doorways)                      Needs repair<br>Chemicals and equipment properly stored<br>Remarks _____<br>_____  |            |   |
| 6.                        | <b>Monitoring Wells</b> (pump and treatment remedy)<br><input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning                      Routinely sampled <input checked="" type="checkbox"/> Good condition<br>All required wells located                      Needs Maintenance                      N/A<br>Remarks _____<br>_____   |            |   |
| <b>D. Monitoring Data</b> |  |            |   |
| 1.                        | <b>Monitoring Data</b><br>Is routinely submitted on time                      Is of acceptable quality   |            |   |
| 2.                        | <b>Monitoring data suggests:</b><br>Groundwater plume is effectively contained                      Contaminant concentrations are declining   |            |   |

|  |  |                   |                   |
|--|--|-------------------|-------------------|
| <b>D. Monitored Natural Attenuation</b>  |  |                   |                   |
| 1.   | <b>Monitoring Wells</b> (natural attenuation remedy) |                   |                   |
|  | Properly secured/locked                              | Functioning       | Routinely sampled |
|  | All required wells located                           | Needs Maintenance | Good condition    |
|  |  |                   | N/A               |
| Remarks <u>The site is so overgrown, most of the monitoring wells could not be located.</u>  |  |                   |                   |
| <b>X. OTHER REMEDIES</b>   |  |                   |                   |
| If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.                          |  |                   |                   |
| <b>XI. OVERALL OBSERVATIONS</b>  |  |                   |                   |
| <b>A. Implementation of the Remedy</b>   |  |                   |                   |
| Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). |  |                   |                   |
| <u>The performance of the remedy cannot be determined without recent data.</u>   |  |                   |                   |
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|  |  |                   |                   |
|  |  |                   |                   |
| <b>B. Adequacy of O&amp;M</b>  |  |                   |                   |
| Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.   |  |                   |                   |
| <u>The site has not been maintained.</u>   |  |                   |                   |
|  |  |                   |                   |
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|  |  |                   |                   |

**C. Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

No indicators of potential remedy problems

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None

**Attachment E**  
**Site Photographs**



Photo: Cedartown Municipal Landfill Site. The area around monitoring well CL-08-WT lacks vegetative cover but does not have notable erosion.



Photo: Cedartown Municipal Landfill Site. The area around interior monitoring well CL-06-WP contains dense underbrush.





Photo: Cedartown Municipal Landfill Site. The area around interior monitoring well CL-05-WP contains dense underbrush.



Photo: Cedartown Municipal Landfill Site. Monitoring well OW-3.





Photo: Cedartown Municipal Landfill Site. Monitoring well OW-5.



Photo: Cedartown Municipal Landfill Site. Monitoring well OW-7R.

**Attachment F**  
**Institutional Controls**



CEDARTOWN. GEORGIA

CERTIFICATION OF ORDINANCE

CITY OF CEDARTOWN

I, EMILY C. SHAW, AS CITY CLERK AND CUSTODIAN OF RECORDS FOR THE CITY OF CEDARTOWN, HEREBY CERTIFY THAT THE ATTACHED ORDINANCE IS A TRUE AND CORRECT COPY OF ORDINANCE NO. 14. 1996, ZONING. AS CONTAINED ON FILE IN THE CITY CLERKS OFFICE OF THE CITY OF CEDARTOWN.

THIS THE 6th DAY OF DECEMBER, 1996.

SIGNED: \_\_\_\_\_

*Emily C. Shaw*  
CITY CLERK

ORDINANCE NO. 14, 1996

**AN ORDINANCE BY THE CITY COMMISSION  
OF THE CITY OF CEDARTOWN, GEORGIA**

**WHEREAS**, there is a need to change the districts within the zoning code of the City of Cedartown, as contained in appendix "B" entitled "zoning", As to article four (IV) thereof; and

**WHEREAS**, recently the City of Cedartown has determined it necessary to acquire certain property to be annexed to the City of Cedartown, which said property was formerly used for the disposal of municipal solid waste in the city and was the former site of the "Cedartown Landfill"; and

**WHEREAS**, the Commission desires to restrict the zoning within the uses of this property, and must therefore create another zoning classification within the city concerning this special use; and

**WHEREAS**, in the future there may be certain additional special use zoning classifications for the uses hereinafter defined or similar problems which may result in amendments of the zoning ordinance of the City of Cedartown in such special circumstances; and

**WHEREAS**, there is a need by this ordinance to adopt certain provisions to authorize these changes in this ordinance;

Now, Therefore, be it ordained by the City Commission of the City of Cedartown, and is hereby ordained and established by said authority as follows:

**Section 1:**

This ordinance shall be first read and reviewed by the Commission at its September, 1996 meeting. A public notice concerning these proposed changes in the zoning code of the City of Cedartown shall, after the ordinance has been reviewed, be published in the Cedartown Standard. Said notice is attached here to exhibit "A" and made apart hereof by reference. Public comments shall be obtained before final approval of these amendments, at a public hearing to be called and held at the regular October meeting of the City Commission of the City of Cedartown, to be held on Monday, October 14, 1996 at seven o'clock in the evening.

Section 2:

The Code of the City of Cedartown as contained in appendix "B" thereof, in article four shall stand amended by adding to section 4.1 thereof entitled "Division into Districts" the following two new additional districts or designations to be defined as follows:

"SU-1 special use (restricted) district

SU-2 (Special Use Classification)"

Section 3:

The Code of the City of Cedartown shall stand further amended as to Appendix "B" article seven (VII) entitled "Use Requirements by District", by adding thereto a new section to be designated as section 7.10. Said section shall read as follows:

"Sec.7.10. Special Use (Restricted) district"

Within a special use (Restricted) district, the following uses shall be permitted:

7.10.1. The planting of permanent vegetation, ground cover, timber or any other vegetation to prevent erosion, sedimentation or to prevent soil disturbance in the designated district.

7.10.2. The property in this classification has previously been declared to potentially be a threat to human health and the environment; or could be potentially such a threat, based upon either federal regulations, state procedures and/or local decisions of the zoning and planning commission of the City of Cedartown. As such, no improvements which would allow human occupation of the property, no ground water collection facilities, ponds, lakes; nor any wells (drinking water, commercial use wells, raw water or any other type wells) shall be permitted in this district.

Section 4:

The Code of the City of Cedartown shall stand further amended by creating a new article eight (VIII) to Appendix "B"-

Zoning which shall be entitled "Article VIII-Special Use Classification District". This new article shall read as follows:

**ARTICLE VIII (8). SPECIAL USE DISTRICT**

- a) A "Special Use District" shall be defined as a district which creates , adjacent to abutting Residential, Commercial, or Industrial zones, a certain new classification of property based upon a "Special Use" of said property, or special stipulations concerning the use of the property; since the property because of its unique character, location or use does not fit within the general use requirements by districts, as contained in article VII hereof. This use classification is based upon either special conditions for the use of the property, certain restrictions that will be applied to the use, or other similar circumstances so that the property thereafter will be designated with the Special Use. As an example, An "R-1" use could have a further classification of "SU" Appended to it in that the residential single family dwellings to be built upon the property shall be based upon lots with either additional set back requirements as those contained in the subdivisions regulations, square footage use restriction, or other similar restrictions that may be placed by the developer of the property; or Special Uses placed upon the property by the ~~the~~ city in connection with any review and approval of zoning of the property.
- b) The use to be permitted by this designation either as a special district under this article, or as a designation within any other Residential, Commercial or Industrial District, shall consider the following uses and matters affecting the property:
  - 1) The use and zoning of surrounding property;
  - 2) The need for a special buffer, special circumstances with regard to the zoning

classification, for other special use requirement of the property based upon location, terrain, size, topography or similar criteria;

- 3) The overall zoning development plan of the City of Cedartown as it relates to the geographical district within one square mile radius of the location of the property;
- 4) Environmental conditions, uses, concerns for similar requirements;
- 5) The submitted development plan, or proposed building plan of the property.
- 6) Other criteria as may be established by the planning commission or building inspector of the City of Cedartown in a review of any requested zoning.

Section 5:

All laws or parts of laws in conflict herewith are specifically repealed. In the event any portion of this ordinance should be declared unconstitutional or otherwise unenforceful, all remaining portions thereof shall continue in full force and effect.

ADOPTED AND APPROVED by the City Commission of the City of Cedartown on the 14th day of October, 1996, at a regular meeting thereof, duly called and held, all Commissioners voting "Aye", none voting "No".

APPROVED:

By: Bert Wood

CHAIRMAN, CEDARTOWN CITY  
COMMISSION

ATTEST:

Kathy Shaw  
SECRETARY, CEDARTOWN CITY  
COMMISSION

**EXHIBIT "A"**

**NOTICE OF ZONING AMENDMENT-CITY OF CEDARTOWN**

Notice is hereby given that an ordinance has been introduced at the September, 1996 meeting of the Cedartown City Commission which, if adopted would make some changes in the zoning code of the city. The first change would be to create a special restricted use classification for property, so that property which may be environmentally hazardous, subject to environmental investigations, or otherwise in need of special restrictions could be so classified pursuant to the zoning ordinances of Cedartown.

The Ordinance also would create a "Special Use Classification" which could be added to the existing zoning restrictions of the City of Cedartown, or create a Special Use District for property based upon the property's unique topography, uses to be made of the property, the need for zoning buffers, or similar matters.

The effect of this ordinance is to create two new zoning classifications which will be used in the future in making decisions concerning zoning within the City of Cedartown. A copy of the proposed ordinance amendments is on file in the office of the Clerk at City Hall. The document is available for public inspection during normal business hours.

A Public Hearing, concerning this proposed zoning ordinance amendment shall be conducted at the October regular meeting of the City Commission of the City of Cedartown, to be held on October 14, 1996 at seven o'clock (7:00) in the evening.

This 9<sup>th</sup> day of September, 1996.

*Emily C. Shaw*  
Emily C. Shaw, City Clerk  
City of Cedartown

9/8/96

279  
EXHIBIT "A"  
NOTICE OF  
ZONING AMENDMENT  
CITY OF CEDARTOWN

Notice is hereby given that an ordinance has been introduced at the September, 1996 meeting of the Cedar-town City Commission which, if adopted would make some changes in the zoning code of the city. The first change would be to create a special restricted use classification for property, so that property which may be environmentally hazardous, subject to environmental investigations, or otherwise in need of special restrictions could be so classified pursuant to the zoning ordinance of Cedar-town.

The Ordinance also would create a "Special Use Classification" which could be added to the existing zoning restrictions of the City of Cedar-town, or create a Special Use District for property based upon the property's unique topography, uses to be made of the property, the need for zoning buffers, or similar matters.

The effect of this ordinance is to create two new zoning classifications which will be used in the future in making decisions concerning zoning within the City of Cedar-town. A copy of the proposed ordinance amendments is on file in the office of the Clerk of City Hall. The document is available for public inspection during normal business hours.

A Public Hearing, concerning this proposed zoning ordinance amendment shall be conducted at the October regular meeting of the City Commission of the City of Cedar-

town, to be held on October 14, 1996 at seven o'clock (7:00) in the evening.

This 8th day of September, 1996.  
Ernie C. Shaw, City Clerk  
City of Cedar-town  
September 10, 1996

**Attachment G**  
**Public Notice**



## **Cedartown Municipal Landfill Superfund Site Five-Year Review**

The U.S. Environmental Protection Agency (EPA) announces the beginning of the second five-year review of the remedial action taken at the Cedartown Municipal Landfill Superfund site in Polk County on the western edge of Cedartown, Georgia. The site is bordered to the east by 10th Street and to the south by Prior Station Road (Route 100). The purpose of the five-year review is to ensure that the selected site remedies are effectively protecting public health and the environment. Five-year reviews are mandated under the Comprehensive Environmental Response, Compensation and Liability Act. The first five-year review at the site was completed in September 2001.

In 1993, EPA issued a Record of Decision (ROD) consisting of ground-water and surface-water monitoring and institutional controls (including cover maintenance, seep controls and land use restrictions) to address potential risk to human health and the environment resulting from possible releases to ground water of Chromium and Manganese. A contingency remedy of pump-and-treat was included in the ROD in case the ground-water performance standards could not be met.

Ground-water monitoring data collected at the site for two and one-half years indicated no constituents, except Manganese, remained above the performance standards. Additional ground-water data indicated that the Manganese in ground water was naturally occurring and not the result of waste disposal activities at the site. Based on this information, the ROD was amended in 1998 to remove the pump-and-treat contingency and discontinue monitoring. The site was deleted from the National Priorities List (NPL) in 1999.

EPA has formed a team to perform the five-year review and prepare a report by the end of September 2006. The five-year review process involves a comprehensive evaluation of the remediation work done at the site, including:

- interviewing local officials and community members
- reviewing land use or zoning changes
- checking current site conditions and access controls
- reviewing monitoring records and reports

The information gathered will be evaluated by the review team, which will determine whether the remedy remains protective of public health and the environment. The team will then produce a final report to document its findings. The completion of the report will be publicly announced, and a copy of the report will be available to the public at the Cedartown Public Library, 245 East Avenue, Cedartown, Georgia.

Public participation in the five-year review process is encouraged and welcomed. If you are interested in participating in the interview process, please contact Mr. Brian Farrier of EPA Region IV at the following address: United States Environmental Protection Agency, Region 4, Sam Nunn Atlanta Federal Center, Attn: Brian Farrier, 61 Forsyth Street, SW, Atlanta, GA 30303-3104. Email: Farrier.Brian@epa.gov

**Attachment H**  
**July 2006 Ground-Water Data**



## Certificate of Analysis

August 3, 2006

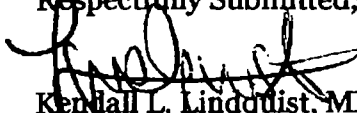
Mr. Mark Harvison  
Project Chemist, CESAS-EN-GG  
U.S. Army Corps of Engineers, Savannah District  
100 W. Oglethorpe Ave.  
P. O. Box 889  
Savannah, GA 31401-3640  
Phone: 912-652-5151  
Fax: 912-652-5311

Dear Mr. Harvison:

Project Name: **Cedartown Landfill**  
**W912-HN-05-D-0013, DO# 0049**  
AML Work Order Number: **0607162**

Attached, please find the hardcopy analytical report (\_\_\_\_\_ total pages) for environmental samples collected by USACE-SAV for the project described above. Problems encountered in the analysis of these samples are documented in the laboratory case narrative. The electronic data deliverables (EDDs) for this report will be e-mailed within a few days of this report. Please feel free to contact me by phone (913-829-0101-ext. 24), fax (913-829-1181) or email ([klindquist@amlabinc.com](mailto:klindquist@amlabinc.com)) if you have any questions.

Respectfully Submitted,

  
Kendall L. Lindquist, MBA  
Operations Manager

The test results contained within this report meet or exceed the requirements of NELAP and/or the specific certification program that is applicable. NELAP Accrediting Authority: Kansas Department of Health and Environment

- Safe Drinking Water Act (Drinking Water)
- Clean Water Act (Waste Water)
- Soil/Hazardous Waste

Certificate Number: E-10254 - Effective Date: 05/01/2005 - Expiration Date: 04/30/2006  
Florida: E87892 North Carolina: 627 South Carolina: 76003001



## **General Case Narrative**

**Project Name: Cedartown Landfill**  
**W912-HN-05-D-0013, DO# 0049**  
**AML Work Order Number: 0607162**

### **Project and Sample Information**

Task order information, completed copies of the chain of custody form(s), and Analytical Management Laboratories (AML) sample condition upon receipt form (s) are included in the Sample Information section. The AML laboratory information management system (LIMS)-generated sample status and receipt report, showing field sample identifiers and corresponding laboratory identifiers is also included. When applicable, the suffix, F has been appended to field sample numbers for samples that have been filtered in the field or laboratory. Separate AML laboratory sample numbers are normally assigned to filtered and unfiltered samples. When applicable, AML VOC soil sample collection and preservation record showing field sample weights and preservation procedures are also included in this section.

### **Reports**

The hardcopy laboratory reports and electronic data deliverables (EDDs) were prepared using a Horizon/Chemware LIMS. Under the procedure used by the laboratory, the hardcopy reports are actually generated using information contained in a database, which is also used to generate electronic deliverables. This procedure was implemented to assure data integrity between the two media. The attached report is organized as follows:

Cover Letter

Laboratory Case Narrative

Sample Information

Sample Result Forms, organized in the following order: by fraction and by sample.

QC Summary organized in the following order: by fraction, by matrix, and by analytical batch number. The QC Summary for each analytical batch contain the following, when applicable:

1. QC Association Form or Method Blank Summary (EPA CLP Form-4 equivalents)
2. Surrogate Recovery Summary, when applicable (EPA CLP Form-2 equivalents)
3. Method Blank (MB) Results (EPA CLP Form-1 equivalents)
4. Laboratory Control Sample (LCS) Results (EPA Form-1 equivalents)
5. LCS duplicate (LCSD) Results (EPA Form-1 equivalents), when available
6. Matrix Spike (MS) Results (EPA Form-1 equivalents)
7. MS duplicate (MSD) Results (EPA CLP Form-1 equivalents)
8. LCS Recoveries Summary (EPA Form-3 equivalents)
9. LCSD (when applicable) Recoveries and RPD Summary (EPA Form-3 equivalents)

10. MS Recoveries Summary (EPA Form-3 equivalents); and
11. MSD Recoveries and RPD Summary (EPA CLP Form-3 equivalents)
12. Post Digestion Spike (PDS) study Results, when applicable (EPA Form-1 equivalents)
13. Serial Dilution (SD) study Results, when applicable (EPA Form-1 equivalents)
14. PDS Recoveries Summary (EPA Form-3 equivalents)
15. RPD for SD results, when applicable (EPA Form-3 equivalents)

### **Sample Result Forms**

Sample results are shown on modified CLP Form 1 equivalents with the following qualifiers:

U = Not detected or detected below method detection limit (MDL) or reliable detection limit (RDL).

J = Detected above MDL or RDL but below the method quantitation limit (MQL).

J = RPD >40% between primary and confirmation column results for GC and HPLC methods.

E = Detected at levels in excess of the upper calibration limit.

R = Rejected due to significant QA outliers.

MDLs, and MQLs have been adjusted for sample weight or volume, dilution, and percent solids, when applicable. Quantitative results for analytes detected in the sample (positive results) are shown under the column labeled "Result". Results coded with the qualifier E should not be used unless additional analyses were unavailable due to other limitations. Data coded as E should not be compared to other data since non-linearity in calibration may be a severe problem for some analytes.

MDL=Method Detection Limit (Lowest amount that can be reported as positive based on statistical considerations).

LLR = Lowest Level for reporting ( $MDL < LLR < MQL$ ). This is the lowest amount that AML reports as positive on a routine basis. The LLR is typically one half of the MQL in our laboratories. However, it can be as low as the MDL and it equals MDL for some parameters. The center of excellence (CX) at Omaha has been pushing the laboratories to use "RDL or Reliable detection limit" as the equivalent of LLR. However, RDL is defined as two times the MDL, which makes it very difficult for the laboratories to use this term.

MQL=Method Quantitation Limit. It is the lowest point on our calibration curve. It is the equivalent of the reporting limit (RL) and/or practical quantitation limit (PQL) used by most laboratories. The term "Reporting Limit" has become meaningless since the laboratories are required to report results below this limit as an estimated result with a "J" flag).

Multiple sample result forms may be provided for one or more of the following reasons, if in the professional judgment of the laboratory that sample results for a given compound may be more accurate from one of the multiple analyses:

Sample was reanalyzed for surrogate recovery outliers;

Sample was reanalyzed at a dilution;

One of the analyses was performed outside holding times; and

A replicate analysis was performed for internal quality control purposes

#### **QC Association Forms**

The list consisting of MB, LCS, LCSD (if any), MS (whenever available), MSD (whenever available), and field samples associated with each QC batch are shown on QC Association Forms, which are CLP Form-4 equivalents. Additional items such as PDS, SD (and CCAL) may be included for some parameters. Separate forms are included for each QC batch for each matrix and fraction. The QC batch numbers shown on these reports are based on LIMS.

#### **Surrogate Recovery Forms (when applicable)**

A summary of the system monitoring compound recoveries for organic analyses is included in this section. EPA CLP Form 2 equivalents are used to report surrogate recoveries. The QC limits from the Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 2, June 2002 (DoD QSM) is used with the exception of VOCs since limits are incomplete for all the surrogates in soil. The QC limits from USACE EM 200-1-3, Appendix I (Shell) are used for VOCs. The Shell document requires limits for controlled matrices (MB, LCS, and LCSD) to be tighter than those for actual matrix samples (MS, MSD, and samples). Corrective action involving re-extraction and/or reanalysis is performed for samples that exceed the surrogate QC limits. Specific corrective action procedures employed for this project and test-specific requirements are described in parameter-specific case narratives.

#### **Method Blank Result Forms**

Laboratory method blank samples were analyzed with each QC batch as described in the QC Association Form. Analytical results for method blanks are shown on CLP Form 1 equivalents. They include data for all target compounds/analytes and surrogates. The MB amount should not exceed one half of the applicable MQL for each target analyte with the exception of common laboratory contaminants. The source of contamination is investigated, corrected, and reanalysis performed whenever possible if the blank contamination above one half of the MQL exceeds 1/10 of the specified regulatory limit and/or the measured concentration of any sample in the associated QC sample batch. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Laboratory Control Sample (LCS) Report Forms**

Laboratory control samples were analyzed with each QC batch as described in the QC Association Form. LCS results of these QC analyses are shown in CLP Form 1. LCS recoveries and RPDs for duplicates (if performed) are shown on EPA Form-3 equivalents. The laboratory statistical control (3-sigma) and marginal (4-sigma) exceedence (ME) limits are compared periodically with QC limits from DoD QSM, which are used as default limits in this report. When the 3-sigma control limit is exceeded for any analyte, associated data is flagged "ME" and 4-sigma ME limits are applied automatically. The total number of method analytes, and the number of ME analytes are tracked and compared against the number allowed per DoD QSM. This information is also provided at the bottom of each Form-3 report. Analytes with LCS recoveries that exceed the 4-sigma limits are

flagged ME\* and reanalysis will be required for the affected analyte if it is a contaminant of concern. If the number of marginal exceedences are greater than those allowed by DoD QSM, reanalysis of the affected QC batch is performed. The relative percent difference (RPDs) for the LCS duplicates, a voluntary laboratory QC parameter is also computed to track in-house precision and provided on Form-3 reports for duplicates. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Matrix Spike/Matrix Spike Duplicate Recoveries Report Forms**

The MS/MSD results are shown in EPA CLP Form-1 equivalents. See section on LCS for additional details. The RPDs for MS duplicates that are outside the applicable QC limits are flagged with an asterisk (\*). The effect of matrix is taken into account in determining corrective action procedures based on MS and MSD results, recoveries, and RPD. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Calibration**

Instruments were calibrated in accordance with applicable method. Deviations are shown in parameter-specific case narratives. Copies of initial calibration and calibration verification summaries and associated raw data will be maintained in project files and made available for detailed client review, if necessary.

#### **Test Methods and Holding Times**

Analyses were performed within applicable holding times except as noted in parameter-specific case narratives.

#### **Batch-specific Quality Control Procedures**

Quality control data from method blanks and laboratory control samples are used as batch QC elements. In accordance with EPA, USACE, and DoD guidelines, QC data from matrix spikes are used as matrix-specific QC elements and QC data from surrogates, internal standard areas, etc. are used as sample-specific QC elements. When the batch QC elements are outside their QC limits, results for associated samples are evaluated and corrective actions that affect the entire sample set are performed. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Matrix-specific or Sample-specific Quality Control Procedures**

Sample concentrations exceeding the upper calibration limit, surrogate recoveries outside the QC limits, calibration parameters (e.g. ICAL, CALV, ICV, CCV, ICB, CCB, etc.) not within QC limits, etc. are used as sample-specific and/or sample-group specific QC elements for one or more associated samples during instrumental analysis. Serial dilution, standard addition, MS recoveries, etc. are used as matrix-specific QC elements for one or more associated samples. When these QC elements are outside their QC limits, associated individual sample results are evaluated and appropriate corrective actions are performed. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

**Manual Integration**

Manual integration operations that have potential to improve accuracy of analysis are performed, as necessary (shown with a "M" flag on raw data) based on visual inspection of peak shapes for each target analyte. Such operations are technically defensible and they are not aimed at meeting the minimum technical requirements of the analytical procedure.

**Statement**

To the best of our knowledge, this data package is in compliance with the terms and conditions of the contract/purchase order/delivery order/task order as applicable, both technically and for completeness, for other than the conditions detailed in this case narrative. The quality assurance manager or his designee, as verified by the signature on the cover letter has authorized release of data contained in this report. In accordance with NELAP guidelines and our certificate (No. E-10254) requirements, this report has been paginated and it may not be reproduced for distribution, except in full, without written approval from Analytical Management Laboratories.



## **Laboratory Case Narrative**

**Project Name: Cedartown Landfill**

**W912-HN-05-D-0013, DO# 0049**

**AML Work Order Number: 0607162**

### **Sulfate/Chloride QC Batch P608013**

#### **Anions - General**

Calibration and sample analyses were performed using IC by SW-846 Method 9056/EPA 300.0. Method criteria for instrument calibration and sample analysis were met. Corrective action was attempted in response to QC outliers requiring such action. When corrective action was not successful, data released by the laboratory may require qualifications for usability in accordance with client procedures and project requirements.

#### **Initial Calibration (ICAL - Soil and Water Samples)**

A six-point initial calibration was employed. Linear regression is used for calibration with a minimum correlation coefficient of 0.995. Acceptable initial calibration was not obtained for the following analytes, which were detected in project samples: None.

#### **Initial Calibration Verification (ICV)**

A second source standard was employed for the ICV. The QC recovery limits are 80% to 120%. There is no allowance for any outliers. QC outliers requiring corrective action: None.

#### **Continuing Calibration Verification (CCVs)**

A same source standard was employed for the CCV. The calibration check samples were within method QC limits for the CCVs. Acceptable CCVs were not obtained for the following analytes, which were detected in project samples: None.

#### **Project Samples**

No significant anomalies were observed.

#### **Method Blanks**

No significant anomalies were noted.

#### **Laboratory Control Sample Recoveries**

The DoD QSM LCS control and marginal exceedence (ME) limits are listed in the LCS/LCSD recovery form. The statistically allowable number of MEs based on the number of target analytes for this method is 0. Analytes that may have recoveries outside the QC limits in the LCS may be within the QC limits in the LCSD. QC outliers requiring corrective action: None.

### **Matrix Spike Recoveries**

The QC limits are listed on the MS recovery form. Analytes that may have recoveries outside the QC limits in the MS may be within the QC limits in MSD. QC outliers requiring corrective action: None.

### **Matrix Spike Duplicates**

The %RPD for matrix spike duplicate results is calculated to assess precision. The QC limit for soil samples are listed in the MSD recovery form. QC outliers requiring corrective action: None.

### **Retention Times**

The retention times for the associated samples were within QC limit windows. Retention times were within QC limits for the project samples with the following exception(s): None.

## **6010B and 6020A QC Batches**

### **Metals – General**

Aqueous samples are digested using AML SOPs based on SW-846 3010 and 3020 methods and soil samples are digested using the AML SOP based on the SW-846 3050 method. The digestates are analyzed using two AML SOPs based on SW-846 instrumental analysis methods: 6010 (ICP-AES) and SW-846 6020 (ICP-MS). The ICP-MS analytical data are reported for analytes (Sb, As, Pb, Se, and Tl) requiring detection limits lower than those achievable by ICP-AES. Please note that aqueous sample results are reported in mg/L for ICP-AES (6010) analysis and in µg/L for ICP-MS (6020) analysis, while the soil sample results are reported in mg/kg units for both methods. The client is encouraged to use analytical results from the method that is most appropriate for the observed sample concentration consistent with project data quality objectives. When the sample results values do not agree, the laboratory will recommend the result that should be used based on professional judgment and additional information that the laboratory may have that are not included in the report.

Surrogate recoveries are not applicable to the metals analysis. Corrective actions were attempted in response to QC outliers as discussed below. When corrective action was not successful, data released by the laboratory may require qualifications for usability in accordance with client procedures and project requirements.

### **Metals – 6010B**

#### **Initial Calibration (ICAL) or Instrument Standardization**

The instrument is standardized using a calibration blank and one ICAL standard (10 mg/L or 100 mg/L). For the ICAL to be acceptable, the %RSDs for triplicate analysis should be within QC limits (<5%). No significant anomalies were noted with the following exceptions: None.

#### **High Level Standard (HLSTD)**

In addition to dynamic linear range studies/verification that are performed quarterly, AML has implemented the analysis of a daily high level standard containing 7 target analytes, which are frequently present at concentrations

greater than that in the calibration standard (10 mg/L). The HLSTD contains the following analytes at the concentrations shown below: Ba (20- mg/L); Cr, Cu, Mn, Ni, and Zn (50-mg/L); and Pb (100-mg/L). For the HLSTD to be acceptable, the percent recoveries for HLSTD should be within QC limits ( $\pm 10\%$ ). No significant anomalies were noted with the following exceptions: None.

#### Low Level Standard (CRI)

The accuracy of analysis at low levels is verified by analyzing the CRI standard that contains target analytes at the MQLs. For the CRI to be acceptable, the percent recoveries should be within QC limits ( $\pm 20\%$ ). No significant anomalies were noted with the following exceptions: None.

#### Initial Calibration Verification (ICV)

A second source standard was employed for the ICV. For ICV to be acceptable, the percent recoveries in ICV should be within QC limits ( $\pm 10\%$ ). The %RSDs for triplicate analysis should also be within QC limits ( $<5\%$ ). No significant anomalies were noted with the following exceptions: None.

#### Initial Calibration Blank (ICB)

For the ICB to be acceptable, the target analytes, when present should be at levels that are less than one half of the applicable method quantitation limits (MQLs). No significant anomalies were noted with the following exceptions: None.

#### Interference Check Standards (ICSA & ICSAB)

A set of interference check standards (ICSA, ICSAB, ICSA2, ICSA3, and ICSAB2) were analyzed at the beginning and at the end of the analytical sequence. For the ICSA to be acceptable, the target analytes, when present should be at levels that are less than one half of the applicable method quantitation limits (MQLs). The IECs may be adjusted until this is achieved. Interelement correction factors (IECs) are verified and project-specific adjustments are made, when necessary. No significant anomalies were noted with the following exceptions.

ICSAB outliers for the initial analysis: None

ICSAB outliers for the final analysis: None

#### Continuing Calibration Verification (CCVs)

For CCVs to be acceptable the percent recoveries for applicable CCVs should be within QC limits ( $\pm 10\%$ ) and the %RSDs for triplicate analysis should be within QC limits ( $<5\%$ ). No significant anomalies were noted with the following exceptions: None.

#### Continuing Calibration Blanks (CCBs)

For CCBs to be acceptable, target analytes, when present in applicable CCBs should be at levels that are less than one half of the applicable method quantitation limits (MQLs).

No significant anomalies were noted with the following exceptions: None.

#### Project Samples

No significant problems were observed for any of the samples with the following exceptions. None

#### **Batch QC Samples**

##### **Method Blank**

No significant anomalies were noted with the following exceptions. None.

##### **Laboratory Control Sample (LCS and/or LCSD) Recoveries**

The DoD QSM LCS control (80-120 for water and soil) and marginal exceedence limits (see below) are listed in the LCS/LCSD recovery form for aqueous and soil samples. The statistically allowable number of sporadic marginal failures (SMFs) or marginal exceedences (ME) is based on the number of method target analytes: 0 for RCRA metals and analytes <11; and 1 for priority pollutants (13), 40CFR Part 258 Appendix-1 metals (15), and TAL metals (23). Expanded SMF QC limits are applicable only to the following SMF analytes: Aluminum (75-120 in soil); Antimony (75-120 in soil); Molybdenum (75-120 in soil and water); Selenium (75-120 in soil and water); silver (75 to 120 in water and 70-125 in soil); and Zinc (75-120 in soil). Analytes that may have recoveries outside the QC limits in the LCS may be within the QC limits in the LCSD. No significant anomalies were noted with the following exceptions. None.

#### **Matrix QC Samples**

##### **Matrix Spike (MS and/or MSD) Recoveries**

The USACE Shell QC limits (75% to 125% for aqueous and soil samples), which are identical to the SW-846 limits are employed. Analytes that may have recoveries outside the QC limits in the MS sample may be within the QC limits in the MSD sample. No significant anomalies were noted with the following exceptions. None.

##### **Matrix Spike Duplicates**

The %RPD for matrix spike duplicate results are calculated to assess precision. The USACE Shell QC limits (25% for aqueous and soil samples) are employed. No significant anomalies were noted with the following exceptions. None.

##### **Post Digestion Spike (PDS) Recoveries**

The USACE Shell QC limits (75% to 125% for aqueous and soil samples) are employed. No significant anomalies were noted with the following exceptions. None.

##### **Serial Dilution**

The USACE Shell QC limits ( $\pm 10\%$  for soil and aqueous sample digestates) for percent difference (%D) between the original and serial dilution (SD) results are employed. In accordance with USACE guidelines, the sample selected for matrix spike is also selected for SD analysis. The SD analysis is not applicable to analytes with SD concentrations less than 5 times the MQL (equivalent to SW-846 guidance, which is 25 times the estimated detection limits). The SD analysis was not applicable to the project samples. The PDS analysis is used for the

evaluation of matrix effects in conjunction with MS and MSD recovery data. QC outliers: None

## **Metals – 6020A**

### **Initial Calibration (ICAL)**

The instrument was standardized for TAL metals including mercury using a calibration blank and one ICAL standard (10- $\mu\text{g/L}$ , 100- $\mu\text{g/L}$ , or 10000- $\mu\text{g/L}$  depending on analyte). For ICAL to be acceptable, the %RSDs for triplicate analysis should be within QC limits (<5%). No significant anomalies were noted with the following exceptions: None.

### **High Level Standard (HLSTD)**

In addition to dynamic linear range studies/verification that are performed quarterly, AML has implemented the analysis of a daily high level standard containing all the TAL metal analytes with concentrations ranging from 50- $\mu\text{g/L}$  for Hg to 100,000  $\mu\text{g/L}$  for the minerals, Aluminum, and Iron. For the HLSTD to be acceptable, the percent recoveries for HLSTD should be within QC limits ( $\pm 10\%$ ). No significant anomalies were noted with the following exceptions: None.

### **Low Level Standard (CRI)**

The accuracy of analysis at low levels is verified by analyzing the CRI standard that contains target analytes at the MQLs. For the CRI to be acceptable, the percent recoveries should be within QC limits ( $\pm 20\%$ ). No significant anomalies were noted with the following exceptions: None.

### **Initial Calibration Verification (ICV)**

A second source standard was employed for the ICV. For ICV to be acceptable, the percent recoveries in ICV should be within QC limits ( $\pm 10\%$ ). The %RSDs for triplicate analysis should also be within QC limits (<5%). No significant anomalies were noted with the following exceptions: None.

### **Initial Calibration Blank (ICB)**

For the ICB to be acceptable, the target analytes, when present should be at levels that are less than one half of the applicable method quantitation limits (MQLs). No significant anomalies were noted with the following exceptions: None.

### **Interference Check Standards (ICSA & ICSAB)**

A set of interference check standards (ICSA and ICSAB) are analyzed at the beginning of the analytical sequence. Ideally, for the ICSA to be acceptable, the target analytes, when present should be at levels that are less than one half of the applicable method quantitation limits (MQLs). However, ICSA standards containing low levels of target analytes that also contain high levels of 6020 method interferences are not commercially available. Interelement correction for ICP-MS is in its infancy. Therefore, the ICSA results are used for overall evaluation of the instrument. The percent recoveries in ICSAB should be within QC limits ( $\pm 20\%$ ) for target analytes. No significant anomalies were noted with the following exceptions: None.

### **Continuing Calibration Verification (CCVs)**

For CCVs to be acceptable, the percent recoveries for applicable CCVs should be within QC limits ( $\pm 10\%$ ) and the %RSDs for triplicate analysis should be within QC limits ( $<5\%$ ). No significant anomalies were noted with the following exceptions: None.

#### Continuing Calibration Blanks (CCBs)

For CCBs to be acceptable, target analytes, when present in applicable CCBs should be at levels that are less than one half of the applicable method quantitation limits (MQLs).

No significant anomalies were noted with the following exceptions: None.

#### Project Samples

No significant problems were observed for any of the samples with the following exceptions. None

#### Batch QC Samples

##### Method Blank

No significant anomalies were noted. The target analytes, when present were at levels that were less than one half of the applicable method quantitation limits (MQLs). No significant anomalies were noted with the following exceptions: None

#### Laboratory Control Sample (LCS and/or LCSD) Recoveries

The DoD QSM LCS control (80-120 for water and soil) and marginal exceedence limits (see below) provided for Method 6010 have been adopted by the laboratory for the 6020 method. These are listed in the LCS/LCSD recovery form for aqueous and soil samples. Since the method is used for less than 11 analytes, the number of allowed marginal exceedence is zero unless more analytes are reported using this method. See case narrative for ICP-AES method for additional details. No significant anomalies were noted with the following exceptions: none.

#### Matrix QC Samples

##### Matrix Spike (MS and/or MSD) Recoveries

The SW-846 limits for Method 6010, which are identical to the USACE Shell QC limits (75% to 125% for aqueous and soil samples) for 6010 are extended to the 6020 method. Analytes that may have recoveries outside the QC limits in the MS sample may be within the QC limits in the MSD sample. No significant anomalies were noted with the following exceptions: none.

##### Matrix Spike Duplicates

The %RPD for matrix spike duplicate results are calculated to assess precision. The USACE Shell QC limits for 6010 (25% for aqueous and soil samples) has been extended to the 6020 method. No significant anomalies were noted with the following exceptions: None.

##### Post Digestion Spike (PDS) Recoveries

The USACE Shell QC limits (75% to 125% for aqueous and soil samples) are employed. No significant anomalies were noted with the following exceptions:

None.

Serial Dilution

The USACE Shell QC limits ( $\pm 10\%$  for soil and aqueous sample digestates) for percent difference (%D) between the original and serial dilution (SD) results are employed. In accordance with USACE guidelines, the sample selected for matrix spike is also selected for SD analysis. The SD analysis is not applicable to analytes with SD concentrations less than 5 times the MQL (equivalent to SW-846 guidance, which is 25 times the estimated detection limits). The SD analysis was not applicable to the project samples. The PDS analysis is used for the evaluation of matrix effects in conjunction with MS and MSD recovery data. No significant anomalies were noted with the following exceptions: None.

# **Field Sample Information**

(COC, Sample Status and Receipt Report, Sample Condition  
Upon Receipt Report)

**0607162**

(Sample Delivery Group, SDG)





Analytical Management Laboratories, Inc.

15130 South Keeler  
Olathe, Kansas 66062  
Phone (913) 829-0101  
Fax (913) 829-1181

40732

Page 1 of 1

Chain of Custody Record / Request for Analysis

Client Contact Name: M. Harrison  
Company Name: USA  
Address: 100 West Oak Grove Ave  
City, State, Zip: SAVANNA GA  
Phone #: (912) 652-5151 Ext:   
Fax #: (912) 829-0101  
Email:

Project Name: Cedentia/N  
Project Number: 49  
Purchase Order Number:   
Project Due Date:   
Project Comments:   
Print Sampler's Name: H. C. Cooper

Analysis/Method to be Performed (Check all that apply)

| Laboratory Project Number: <u>0607162</u> |                    |         |      |        | Specify method # ---> |  |                  |      |                                |             |      |       |            |      |            |                  |     |     |            | Please include any information that may be useful in the analysis of the sample.<br><br>Example: high concentration<br>List analytes<br>MS/MSD |                  |         |          |      |
|---|--------------------|---------|------|--------|-----------------------|--|------------------|------|--------------------------------|-------------|------|-------|------------|------|------------|------------------|-----|-----|------------|--|------------------|---------|----------|------|
| Lab ID                                    | Sample Description | Date    | Time | Matrix | Total # Containers    | Preservative<br>List total number of bottles for each preservative type. |                  |      |                                |             | VOCs | SVOCs | Pesticides | PCBs | Herbicides | Metals (specify) | DRO | GRO | Explosives |  | Anions (specify) | Sulfate | Chloride |      |
|   |                    |         |      |        |                       | HCl  | HNO <sub>3</sub> | NaOH | H <sub>2</sub> SO <sub>4</sub> | Unpreserved |      |       |            |      |            |                  |     |     |            |  |                  |         |          | 4° C |
| 0607162-01                                | OW-3               | 7-20-06 | 1231 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |
| 0607162-02                                | OW-2               | 7-20-06 | 1405 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |
| 0607162-03                                | OW-4               | 7-20-06 | 1647 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |
| 0607162-04                                | OW-5               | 7-20-06 | 1750 | AG     | 9                     |  | 3                |      | 3                              | 3           |      |       |            |      |            | 3                |     |     |            |  | 3                | 3       |          |      |
| 0607162-05                                | OW-120             | 7-20-06 | 1300 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |
| 0607162-06                                | CL-07-WP           | 7-20-06 | 1830 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |
| 0607162-07                                | OW-7R              | 7-21-06 | 0850 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |
| 0607162-08                                | OW-6B              | 7-21-06 | 1000 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |
| 0607162-09                                | OW Blank           | 7-21-06 | 1200 | AG     | 3                     |  | 1                |      |                                |             |      |       |            |      |            |                  |     |     |            |  |                  |         |          |      |

|                                 |                                      |                           |                                 |                            |
|---------------------------------|--------------------------------------|---------------------------|---------------------------------|----------------------------|
| C<br>U<br>S<br>T<br>O<br>D<br>Y | Relinquished By: <u>H. C. Cooper</u> | Date/Time: <u>7-26-06</u> | Received By: <u>[Signature]</u> | Date/Time: <u>7/27/06</u>  |
|                                 | Relinquished By: <u></u>             | Date/Time: <u></u>        | Received By: <u></u>            | Date/Time: <u>10/18/06</u> |

By signing the request (chain of custody) you are ordering work from Analytical Management Laboratories, Inc. which constitutes the acceptance of the terms and conditions on the back of this form.

|  |  |   |  |  |
|--|--|---|--|--|
| <b>Delivery Method</b><br><input type="checkbox"/> Delivered in Person<br><input checked="" type="checkbox"/> Carrier <u>UPS</u><br><input type="checkbox"/> See Sample Rpt Form | <b>Custody Seals</b><br><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br><input type="checkbox"/> Intact <input type="checkbox"/> Broken | <b>Coolant</b><br><input checked="" type="checkbox"/> Ice <input type="checkbox"/> Blue Ice <input type="checkbox"/> None | <b>Cooler Temp.</b><br><input checked="" type="checkbox"/> Temp. <u>2.1°C</u><br><input type="checkbox"/> Cooler | <b>Receiving Comments:</b><br><u>AML 7/20/06: 2.1°C</u><br><u>AML 7/27/06: 2.0°C</u> |
|--|--|---|--|--|

# **Analytical Management Laboratories - Sample Status and Receipt Report**

**AML Project Number**

**0607162**

**Client AML ID**

**USACE Savannah**

**Client Project ID**

**Cedartown, DO# 0049**

0016

| <i>AML Sample</i> | <i>Matrix</i> | <i>Client Sample ID</i> | <i>Date Collected</i> | <i>Projected Due Date</i> | <i>Analysis</i>   | <i>Comments</i>                       |
|-------------------|---------------|-------------------------|-----------------------|---------------------------|-------------------|---------------------------------------|
| 0607162-01        | Water         | OW-3                    | 07/20/06 12:31        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-01        | Water         | OW-3                    | 07/20/06 12:31        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-01        | Water         | OW-3                    | 07/20/06 12:31        | 08/06/06                  | Sulfate by 300.0  |                                       |
| 0607162-01        | Water         | OW-3                    | 07/20/06 12:31        | 08/06/06                  | Chloride by 300.0 |                                       |
| 0607162-02        | Water         | OW-2                    | 07/20/06 14:05        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-02        | Water         | OW-2                    | 07/20/06 14:05        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-02        | Water         | OW-2                    | 07/20/06 14:05        | 08/06/06                  | Chloride by 300.0 |                                       |
| 0607162-02        | Water         | OW-2                    | 07/20/06 14:05        | 08/06/06                  | Sulfate by 300.0  |                                       |
| 0607162-03        | Water         | OW-4                    | 07/20/06 16:47        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-03        | Water         | OW-4                    | 07/20/06 16:47        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-03        | Water         | OW-4                    | 07/20/06 16:47        | 08/06/06                  | Chloride by 300.0 |                                       |
| 0607162-03        | Water         | OW-4                    | 07/20/06 16:47        | 08/06/06                  | Sulfate by 300.0  |                                       |
| 0607162-04        | Water         | OW-5                    | 07/20/06 17:50        | 08/06/06                  | Metals by 6020A   | MS MSD, Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-04        | Water         | OW-5                    | 07/20/06 17:50        | 08/06/06                  | Metals by 6010B   | MS MSD, Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-04        | Water         | OW-5                    | 07/20/06 17:50        | 08/06/06                  | Sulfate by 300.0  | MS MSD                                |
| 0607162-04        | Water         | OW-5                    | 07/20/06 17:50        | 08/06/06                  | Chloride by 300.0 | MS MSD                                |
| 0607162-05        | Water         | OW-Dup                  | 07/20/06 13:00        | 08/06/06                  | Sulfate by 300.0  |                                       |
| 0607162-05        | Water         | OW-Dup                  | 07/20/06 13:00        | 08/06/06                  | Chloride by 300.0 |                                       |
| 0607162-05        | Water         | OW-Dup                  | 07/20/06 13:00        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-05        | Water         | OW-Dup                  | 07/20/06 13:00        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-06        | Water         | CL-07-WP                | 07/20/06 18:30        | 08/06/06                  | Chloride by 300.0 |                                       |
| 0607162-06        | Water         | CL-07-WP                | 07/20/06 18:30        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-06        | Water         | CL-07-WP                | 07/20/06 18:30        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-06        | Water         | CL-07-WP                | 07/20/06 18:30        | 08/06/06                  | Sulfate by 300.0  |                                       |

# **Analytical Management Laboratories - Sample Status and Receipt Report**

**AML Project Number**

**0607162**

**Client AML ID**

**USACE Savannah**

**Client Project ID**

**Cedartown, DO# 0049**

2100

| <i>AML Sample</i> | <i>Matrix</i> | <i>Client Sample ID</i> | <i>Date Collected</i> | <i>Projected Due Date</i> | <i>Analysis</i>   | <i>Comments</i>               |
|-------------------|---------------|-------------------------|-----------------------|---------------------------|-------------------|-------------------------------|
| 0607162-07        | Water         | OW-7R                   | 07/21/06 08:50        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-07        | Water         | OW-7R                   | 07/21/06 08:50        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-07        | Water         | OW-7R                   | 07/21/06 08:50        | 08/06/06                  | Chloride by 300.0 |                               |
| 0607162-07        | Water         | OW-7R                   | 07/21/06 08:50        | 08/06/06                  | Sulfate by 300.0  |                               |
| 0607162-08        | Water         | OW-6B                   | 07/21/06 10:00        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-08        | Water         | OW-6B                   | 07/21/06 10:00        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-08        | Water         | OW-6B                   | 07/21/06 10:00        | 08/06/06                  | Sulfate by 300.0  |                               |
| 0607162-08        | Water         | OW-6B                   | 07/21/06 10:00        | 08/06/06                  | Chloride by 300.0 |                               |
| 0607162-09        | Water         | OW BLank                | 07/21/06 12:00        | 08/06/06                  | Sulfate by 300.0  |                               |
| 0607162-09        | Water         | OW BLank                | 07/21/06 12:00        | 08/06/06                  | Chloride by 300.0 |                               |
| 0607162-09        | Water         | OW BLank                | 07/21/06 12:00        | 08/06/06                  | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-09        | Water         | OW BLank                | 07/21/06 12:00        | 08/06/06                  | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |



Analytical Management Laboratories, Inc.

**AML - Sample Condition Upon Receipt Report**  
(See Comments for exceptions)

**Client ID:** USACE Sav  
**Project ID:** Cedartown, DO# 0049

**AML Work Order Number:** 0607162  
**Cooler ID:** AML71201

**Delivery Method**

**Delivery Method:** UPS

**Name of Person Receiving Samples:** Nissa Said  
**Airbill Number:** A3689465240/5231

**Custody Seals**

**Were Custody Seals Present?** Yes

**Cooler Opened By:** Nissa Said

**Were Custody Seals Intact?** Yes

**Date Opened** 7/27/06

**Number of Custody Seals** 2

**Packaging / Coolant / Temperature**

**Type of Coolant Used:** Ice

**Temperature of Cooler:** 2.10

**Type of Packing Used:** None

**Chain of Custody**

**Was Chain of Custody filled out properly?** Yes

**Do Chain of Custody and Sample Labels agree?** Yes

**Comments/  
Exceptions**

|  |
|--|
|  |
|--|

**Were all sample labels complete?** Yes

**Were all bottles sealed in separate plastic bags?** Yes

**Were correct preservatives added to the samples?** Yes

**Did all the bottles arrive unbroken?** Yes

**Was sample PH within QC limits?** Yes

**Was a sufficient amount of sample sent for analysis?** Yes

**Were air bubbles absent in VOA samples?** NA

**Was project manager contacted about any "out of control" issues?** Yes

**Samples Received by:** Nissa Said

**Project Manager Review:**

**Date:** 7/27/06

**Date:**

0018



Analytical Management Laboratories, Inc.

AML - Sample Condition Upon Receipt Report  
(See Comments for exceptions)

Client ID: USACE Sav

AML Work Order Number: 0607162

Project ID: Cedartown, DO# 0049

Cooler ID: AML7271

Delivery Method

Delivery Method: UPS

Name of Person Receiving Samples: Nissa Said

Airbill Number: A3689465240/5231

Custody Seals

Were Custody Seals Present? Yes

Cooler Opened By: Nissa Said

Were Custody Seals Intact? Yes

Date Opened 7/27/06

Number of Custody Seals 2

Packaging / Coolant / Temperature

Type of Coolant Used: Ice

Temperature of Cooler: 2.00

Type of Packing Used: None

Chain of Custody

Was Chain of Custody filled out properly? Yes

Do Chain of Custody and Sample Labels agree? Yes

Comments/  
Exceptions

Were all sample labels complete? Yes

Were all bottles sealed in separate plastic bags? Yes

Were correct preservatives added to the samples? Yes

Did all the bottles arrive unbroken? Yes

Was sample PH within QC limits? Yes

Was a sufficient amount of sample sent for analysis? Yes

Were air bubbles absent in VOA samples? NA

Was project manager contacted about any "out of control" issues? Yes

Samples Received by: Nissa Said

Project Manager Review: \_\_\_\_\_

Date: 7/27/06

Date: \_\_\_\_\_

0019



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Shipping Document

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|        | 46     |                    |

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SHIPMENT FROM  
UPS ACCOUNT NO. **389376**  
REFERENCE NUMBER

Horace Cooper  
TELEPHONE **912-677-6082**

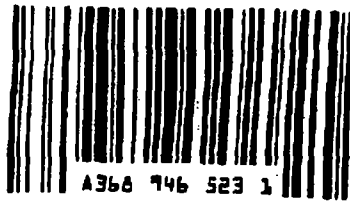
US Army Corp of Eng  
100 West Oglethorpe Ave  
Smyrna Ga 31401

DELIVERY TO  
TELEPHONE **913 829-0101**

Smith's Landing  
AMZ  
15130 South Keeler  
Lathie KS **66062**

**UPS Next Day Air Saver<sup>®</sup>**  
EXTREMELY URGENT

**1P**



A358 746 523 1

1000 MW

United Parcel Service, Louisville, KY

0020



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WEIGHT

DIMENSIONAL  
WEIGHT

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ACCOUNT  
NO.

389376

REFERENCE NUMBER

TELEPHONE

Horace Cooper 912-677-6082  
US Army Corp of Engineers  
100 W. Oglethorpe Ave  
Savannah Ga 31401

DELIVERY TO

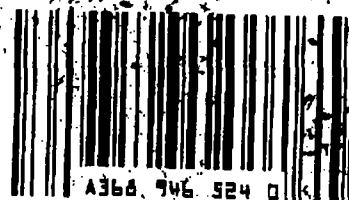
TELEPHONE

Sammy Receiving 913 829-0161  
AML

15130 South Keeler  
Olathe KS 66062

**UPS Next Day Air Saver<sup>®</sup>**

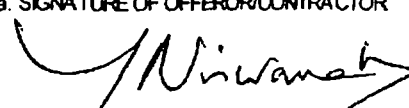

EXTREMELY URGENT



A368 946 524 01

06254 10/00 MW

United Parcel Service, Louisville, KY

|  |  |  |  |   |  |  |  |
|--|--|--|--|---|--|--|--|
| <b>SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS</b><br><i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, AND 30</i>  |  |  |  | 1. REQUISITION NUMBER<br>W33SJC61861523   |  | PAGE 1 OF 3  |  |
| 2. CONTRACT NO.<br>W912HN-05-D-0013  |  | 3. AWARD/EFFECTIVE DATE<br>12-Jul-2006 |  | 4. ORDER NUMBER<br>0049   |  | 5. SOLICITATION NUMBER   |  |
| 7. FOR SOLICITATION INFORMATION CALL:  |  | a. NAME                                |  |   |  | b. TELEPHONE NUMBER (No Collect Calls)   |  |
| 9. ISSUED BY<br>US ARMY ENGINEER DISTRICT SAVANNAH<br>100 W OGLETHORPE AVENUE<br>SAVANNAH GA 31401-3640<br><br>TEL:<br>FAX:  |  | CODE<br>W912HN                         |  | 10. THIS ACQUISITION IS<br><input type="checkbox"/> UNRESTRICTED<br><input checked="" type="checkbox"/> SET ASIDE: 100 % FOR<br><input type="checkbox"/> SMALL BUSINESS<br><input type="checkbox"/> HUBZONE SMALL BUSINESS<br><input checked="" type="checkbox"/> 8(A)<br>NAICS: 541380<br>SIZE STANDARD: \$5 million |  | 11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED<br><input type="checkbox"/> SEE SCHEDULE<br>13a. THIS CONTRACT IS A RATED ORDER UNDER OPAS (15 CFR 700)<br>13b. RATING<br>14. METHOD OF SOLICITATION<br><input type="checkbox"/> RFP <input type="checkbox"/> IFB <input type="checkbox"/> RFP |  |
| 15. DELIVER TO CONTRACTING DIVISION<br>100 W OGLETHORPE AVE<br>SAVANNAH GA 31401-3640  |  | CODE<br>K5P0000                        |  | 18. ADMINISTERED BY<br><br><div style="text-align: center; font-weight: bold;">SEE ITEM 9</div>   |  |  |  |
| 17a. CONTRACTOR/OFFEROR<br>ANALYTICAL MANAGEMENT LABS, INC<br>TENKAFI VISWANATHAN<br>15130 SOUTH KEELER, SUITE B<br>OLATHE KS 66062<br><br>TEL: (913) 829-0101 EXT 26  |  | CODE<br>1LE38<br><br>FACILITY CODE     |  | 18a. PAYMENT WILL BE MADE BY<br>US ARMY CORPS OF ENGRS FINANCE CENTER<br>CEFC-AO-P<br>5720 INTEGRITY DRIVE<br>MILLINGTON TN 38054-5005<br>CODE<br>DFAS  |  |  |  |
| <input type="checkbox"/> 17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER   |  |  |  | 18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a. UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM   |  |  |  |
| 19. ITEM NO.   |  | 20. SCHEDULE OF SUPPLIES/ SERVICES     |  | 21. QUANTITY  |  | 22. UNIT   |  |
|  |  | SEE SCHEDULE                           |  |   |  | 23. UNIT PRICE   |  |
|  |  |  |  |   |  | 24. AMOUNT   |  |
| 25. ACCOUNTING AND APPROPRIATION DATA<br><br>See Schedule  |  |  |  |   |  | 26. TOTAL AWARD AMOUNT (For Govt. Use Only)<br><br>\$4,437.00  |  |
| <input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4, FAR 52.212-3, 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED   |  |  |  |   |  |  |  |
| <input type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4, FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED   |  |  |  |   |  |  |  |
| 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <input type="checkbox"/> COPIES<br><input type="checkbox"/> TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN. |  |  |  | 29. AWARD OF CONTRACT: REFERENCE<br><input checked="" type="checkbox"/> OFFER DATED . . . YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS: SEE SCHEDULE  |  |  |  |
| 30a. SIGNATURE OF OFFEROR/CONTRACTOR<br>  |  |  |  | 31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)<br>  |  | 31c. DATE SIGNED<br>12-Jul-2006  |  |
| 30b. NAME AND TITLE OF SIGNER<br>(TYPE OR PRINT)<br>T.S. VISWANATHAN<br>VICE PRESIDENT   |  | 30c. DATE SIGNED<br>7/21/2006          |  | 31b. NAME OF CONTRACTING OFFICER (TYPE OR PRINT)<br>JULIE M OLIVER /<br>TEL: (912) 652-5899<br>EMAIL: julie.m.oliver@sas02.usace.army.mil   |  |  |  |

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Prescribed by GSA  
FAR (48 CFR) 53.212



**SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS  
(CONTINUED)**

PAGE 2 OF 3

| 19. ITEM NO. | 20. SCHEDULE OF SUPPLIES/ SERVICES | 21. QUANTITY | 22. UNIT | 23. UNIT PRICE | 24. AMOUNT |
|--------------|------------------------------------|--------------|----------|----------------|------------|
|              | SEE SCHEDULE                       |              |          |                |            |

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: \_\_\_\_\_

32b. SIGNATURE OF AUTHORIZED GOVERNMENT  
REPRESENTATIVE

32c. DATE

32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT  
REPRESENTATIVE

32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE

32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE

32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE

33. SHIP NUMBER

34. VOUCHER NUMBER

35. AMOUNT VERIFIED  
CORRECT FOR

36. PAYMENT

37. CHECK NUMBER

☐ PARTIAL ☐ FINAL

☐ COMPLETE ☐ PARTIAL ☐ FINAL

38. S/R ACCOUNT NUMBER

39. S/R VOUCHER NUMBER

40. PAID BY

41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT

42a. RECEIVED BY (Print)

41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER

41c. DATE

42b. RECEIVED AT (Location)

42c. DATE REC'D (YY/MM/DD)

42d. TOTAL CONTAINERS

## Section SF 1449 - CONTINUATION SHEET

|   | Clin   | Description    | Quantity | Unit | Unit Price | Total       |
|---|--------|----------------|----------|------|------------|-------------|
| 1 | 0010AA | EPA 6010B, Aq. | 90       | ea   | \$ 30.00   | \$ 2,700.00 |
| 2 | 0010AD | EPA 6020A, Aq. | 30       | ea   | \$ 30.00   | \$ 900.00   |
| 3 | 0010BV | Chloride, Aq.  | 15       | ea   | \$ 25.00   | \$ 375.00   |
| 4 | 0010EN | Sulfate, Aq.   | 15       | ea   | \$ 25.00   | \$ 375.00   |
| 5 | 0014AB | PDF (2%)       | 1        | ea   | \$ -       | \$ 87.00    |
|   |        |                |          |      |            |             |
|   |        |                |          |      | TOTAL:     | \$ 4,437.00 |

## CEDARTOWN LANDFILL

1. The quantities above are estimated; however, the total amount of this Task Order SHALL NOT EXCEED \$4,437.00.
2. Accounting and Appropriation DATA: 96X31220000 082447 3230G71D9B04603 NA 96096
3. Receipt of this Task Order is your NOTICE TO PROCEED.
4. Container Requirements: Horace Cooper will coordinate delivery or sample containers.
5. Fieldwork Completion Date: 30 September 2006.
6. Turnaround Time: 21 days.
7. Reports and Invoices are to be delivered to:  
U.S. Army Corps of Engineers, Savannah District  
ATTN: CESAS-EN-GG/Mark Harvison  
P.O. Box 889 (31402-0889)  
100 West Oglethorpe Ave  
Savannah, GA 31401
8. Chemist Name and Phone Number: Mark Harvison 912-652-5151

# **Field Sample Analysis Data Sheets**

(Form I equivalents)

**0607162**

(Sample Delivery Group, SDG)

**6010B**

(parameter)

**P607418**

(Analytical Batch)

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: OW-3  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-01  
Date Collected: 07/20/06 12:31  
Date Analyzed: 07/30/06 10:08  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 08:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | ML     | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |        | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 1.43   | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 3.30   | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      | 0.0287 | mg/L  | J | 0.0200  | 0.0600 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: QW-2  
Project: Cedartown, DO# 0049  
Project Num: 0607182  
Lab Sample ID: 0607162-02  
Date Collected: 07/20/06 14:05  
Date Analyzed: 07/30/06 10:13  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |        | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 0.0456 | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 9.98   | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-82-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      |        | mg/L  | U | 0.0200  | 0.0800 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: OW-4  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-03  
Date Collected: 07/20/06 16:47  
Date Analyzed: 07/30/06 10:18  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |        | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 0.384  | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 187    | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      |        | mg/L  | U | 0.0200  | 0.0600 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
 Client ID: USACE Savannah  
 Matrix: Water  
 Initial/Final: 50 mL / 50 mL  
 % Solids:  
 Analytical Method: 6010B  
 Preparation: EPA 3010A  
 Batch: P607418  
 Leach Method: NA

Sample ID: OW-5  
 Project: Cedartown, DO# 0049  
 Project Num: 0607162  
 Lab Sample ID: 0607182-04  
 Date Collected: 07/20/06 17:50  
 Date Analyzed: 07/30/06 10:23  
 Date Received: 07/27/06 10:48  
 Date Leached: NA  
 Date Prepared: 07/28/06 08:10

| CAS NO.   | COMPOUND  | RESULT  | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|---------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |         | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |         | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 0.00555 | mg/L  | J | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 1.65    | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |         | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      |         | mg/L  | U | 0.0200  | 0.0600 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 60108  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: QW-Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-05  
Date Collected: 07/20/06 13:00  
Date Analyzed: 07/30/06 11:03  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT  | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|---------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |         | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |         | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 0.00632 | mg/L  | J | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 1.68    | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |         | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      |         | mg/L  | U | 0.0200  | 0.0600 | 1   |



## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: CL-07-WP  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-06  
Date Collected: 07/20/06 18:30  
Date Analyzed: 07/30/06 11:08  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  | 0.130  | mg/L  |   | 0.0100  | 0.0200 | 1   |
| 7439-98-5 | Manganese | 0.254  | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 65.4   | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      | 0.0831 | mg/L  |   | 0.0200  | 0.0800 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: QW-7B  
Project: Cedartown, DO# 0049  
Project Num: 0607182  
Lab Sample ID: 0607182-07  
Date Collected: 07/21/06 08:50  
Date Analyzed: 07/30/06 11:13  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 08:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |        | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 0.0638 | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 2.04   | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-82-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-86-6 | Zinc      | 0.0490 | mg/L  | J | 0.0200  | 0.0600 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: OW-6B  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-08  
Date Collected: 07/21/06 10:00  
Date Analyzed: 07/30/06 11:18  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 08:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |        | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 0.967  | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 1.73   | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      |        | mg/L  | U | 0.0200  | 0.0600 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418  
Leach Method: NA

Sample ID: OW BLank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-09  
Date Collected: 07/21/06 12:00  
Date Analyzed: 07/30/06 11:24  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |        | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 0.668  | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      |        | mg/L  | U | 0.0200  | 0.0600 | 1   |

**Field Sample Analysis Data Sheets**  
(Form I equivalents)

**0607162**  
(Sample Delivery Group, SDG)

**6020A**  
(parameter)

**P607419**  
(Analytical Batch)

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: QW-3  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-01  
Date Collected: 07/20/06 12:31  
Date Analyzed: 07/29/06 20:25  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | SQL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 0.805  | ug/L  | J | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: OW-2  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-02  
Date Collected: 07/20/06 14:05  
Date Analyzed: 07/29/06 20:30  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | ML   | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 0.547  | ug/L  | J | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: OW-4  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-03  
Date Collected: 07/20/06 16:47  
Date Analyzed: 07/29/06 20:35  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | ML   | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     |        | ug/L  | U | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |



## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: QW-5  
Project: Cedartown, DO# 0049  
Project Num: 0607192  
Lab Sample ID: 0607162-04  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/29/06 20:40  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | MQL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     |        | ug/L  | U | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: OW-Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-05  
Date Collected: 07/20/06 13:00  
Date Analyzed: 07/29/06 21:20  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | MLL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     |        | ug/L  | U | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: CL-07-WP  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-06  
Date Collected: 07/20/06 18:30  
Date Analyzed: 07/29/06 21:26  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | MLL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 4.90   | ug/L  |   | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  | 1.25   | ug/L  |   | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: OW-7R  
Project: Cedartown, DC# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-07  
Date Collected: 07/21/06 08:50  
Date Analyzed: 07/29/06 21:31  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | ML   | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 2.19   | ug/L  |   | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  | 1.11   | ug/L  |   | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: OW-6B  
Project: Cedartown, DC# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-08  
Date Collected: 07/21/06 10:00  
Date Analyzed: 07/29/06 21:36  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | MQL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     |        | ug/L  | U | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419  
Leach Method: NA

Sample ID: QW BLank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-09  
Date Collected: 07/21/06 12:00  
Date Analyzed: 07/29/06 21:41  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | MQL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     |        | ug/L  | U | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |

# **Field Sample Analysis Data Sheets**

(Form I equivalents)

**0607162**

(Sample Delivery Group, SDG)

**Sulfate/Chloride**

(parameter)

**P608013**

(Analytical Batch)

1A - Equivalent

INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: OW-3  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-01  
Date Collected: 07/20/06 12:31  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MLL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 3.09   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 12.1   | mg/L  |   | 0.200 | 1.00  | 1   |



## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: QW-2  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-02  
Date Collected: 07/20/06 14:05  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | ML    | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 6.75   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 7.42   | mg/L  |   | 0.200 | 1.00  | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: OW-4  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-03  
Date Collected: 07/20/06 16:47  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MQL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 10.5   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 1150   | mg/L  |   | 20.0  | 100   | 100 |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: OW-5  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-04  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MLL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 0.977  | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 14.9   | mg/L  |   | 0.200 | 1.00  | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: OW-Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-05  
Date Collected: 07/20/06 13:00  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MQL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 0.923  | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 15.1   | mg/L  |   | 0.200 | 1.00  | 1   |

1A - Equivalent

INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: CL-07-WP  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-06  
Date Collected: 07/20/06 18:30  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MLL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride |        | mg/L  | U | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 68.3   | mg/L  |   | 2.00  | 10.0  | 10  |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: OW-7R  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-07  
Date Collected: 07/21/06 08:50  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MLL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 2.30   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 5.37   | mg/L  |   | 0.200 | 1.00  | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: OW-6B  
Project: Cedartown DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-08  
Date Collected: 07/21/06 10:00  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | ML    | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 1.20   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 2.56   | mg/L  |   | 0.200 | 1.00  | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013  
Leach Method: NA

Sample ID: OW BLank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-09  
Date Collected: 07/21/06 12:00  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MLL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 0.459  | mg/L  | J | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 8.34   | mg/L  |   | 0.200 | 1.00  | 1   |



**QAQC Analysis Data Sheets**  
(Form I equivalents, QCAF Form, Recovery Forms)

**0607162**  
(Sample Delivery Group, SDG)

**6010B**  
(parameter)

**P607418**  
(Analytical Batch)

# Quality Control Association Form

Lab Name: Analytical Management Laboratories, Inc.  
QC Batch: P607418

Fraction: METALS

| Date Analyzed | Date Prepared | Lab Sample ID | Original Sample | Sample Type      | Project Number |
|---------------|---------------|---------------|-----------------|------------------|----------------|
| 7/30/06       | 7/28/06       | 0607162-01    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-02    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-03    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-04    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-05    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-06    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-07    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-08    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/28/06       | 0607162-09    |                 | SAMPLE           | 0607162        |
| 7/30/06       | 7/30/06       | 6G30003-SRD1  | 0607162-04      | Serial Dilution  | 0607162        |
| 7/30/06       | 7/28/06       | P607418-BLK1  |                 | Method Blank     | 0607162        |
| 7/30/06       | 7/28/06       | P607418-BS1   |                 | LCS              | 0607162        |
| 7/30/06       | 7/28/06       | P607418-BSD1  |                 | LCS Dup          | 0607162        |
| 7/30/06       | 7/28/06       | P607418-MS1   | 0607162-04      | Matrix Spike     | 0607162        |
| 7/30/06       | 7/28/06       | P607418-MSD1  | 0607162-04      | Matrix Spike Dup | 0607162        |
| 7/30/06       | 7/28/06       | P607418-PS1   | 0607162-04      | Post Spike       | 0607162        |

Batch Reviewed by

*[Signature]*

Date Reviewed

07/30/06

Date Printed Sunday, July 30, 2006

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418

Sample ID: Method Blank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607418-BLK1  
Date Collected:  
Date Analyzed: 07/30/06 09:55  
Date Received:  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  |        | mg/L  | U | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese |        | mg/L  | U | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    |        | mg/L  | U | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  |        | mg/L  | U | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      |        | mg/L  | U | 0.0200  | 0.0600 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418

Sample ID: LCS  
Project: Cedartown, DO# 0049  
Project Num: 0607182  
Lab Sample ID: P607418-BS1  
Date Collected:  
Date Analyzed: 07/30/06 09:59  
Date Received:  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium | 0.520  | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  | 0.530  | mg/L  |   | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 2.10   | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 106    | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  | 0.516  | mg/L  |   | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      | 1.05   | mg/L  |   | 0.0200  | 0.0600 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.Client ID: USACE SavannahMatrix: WaterInitial/Final: 50 mL / 50 mL

% Solids:

Analytical Method: 6010BPreparation: EPA 3010ABatch: P607418Sample ID: LCS DupProject: Cedartown, DO# 0049Project Num: 0607162Lab Sample ID: P607418-BSD1

Date Collected:

Date Analyzed: 07/30/06 10:03

Date Received:

Date Prepared: 07/28/06 08:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MLL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium | 0.523  | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  | 0.533  | mg/L  |   | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 2.11   | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 106    | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  | 0.519  | mg/L  |   | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      | 1.06   | mg/L  |   | 0.0200  | 0.0600 | 1   |

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: METALS  
Units: mg/L

Batch: P607418  
Matrix: Water

Lab Sample ID: P607418-BS1

| Analyte   | SPIKE<br>ADDED | LCS<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|-----------|----------------|---------------|------|------------|------------------|-----|
|           |                |               |      |            | LCL              | UCL |
| Beryllium | 0.500          | 0.520         | 104  |            | 80               | 120 |
| Chromium  | 0.500          | 0.530         | 106  |            | 80               | 120 |
| Manganese | 2.00           | 2.10          | 105  |            | 80               | 120 |
| Sodium    | 100            | 108           | 106  |            | 80               | 120 |
| Vanadium  | 0.500          | 0.516         | 103  |            | 80               | 120 |
| Zinc      | 1.00           | 1.05          | 105  |            | 80               | 120 |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 6

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: METALS  
Units: mg/L

Batch: P607418  
Matrix: Water

Lab Sample ID: P607418-BSD1

| Analyte   | SPIKE<br>ADDED | LCSD<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     | LCS/LCSD<br>RPD |
|-----------|----------------|----------------|------|------------|------------------|-----|-----------------|
|           |                |                |      |            | LCL              | UCL |                 |
| Beryllium | 0.500          | 0.523          | 105  |            | 80               | 120 | 0.575           |
| Chromium  | 0.500          | 0.533          | 107  |            | 80               | 120 | 0.584           |
| Manganese | 2.00           | 2.11           | 106  |            | 80               | 120 | 0.475           |
| Sodium    | 100            | 106            | 106  |            | 80               | 120 | 0.00            |
| Vanadium  | 0.500          | 0.519          | 104  |            | 80               | 120 | 0.580           |
| Zinc      | 1.00           | 1.06           | 106  |            | 80               | 120 | 0.948           |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 6

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418

Sample ID: Matrix Spike  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607418-MS1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/30/06 10:34  
Date Received: 07/27/06 10:48  
Date Prepared: 07/28/06 08:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MLL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium | 0.530  | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  | 0.543  | mg/L  |   | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 2.13   | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 109    | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  | 0.515  | mg/L  |   | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      | 1.06   | mg/L  |   | 0.0200  | 0.0600 | 1   |



## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418

Sample ID: Matrix Spike Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607418-MSD1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/30/06 10:39  
Date Received: 07/27/06 10:48  
Date Prepared: 07/28/06 06:10

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    | DIL |
|-----------|-----------|--------|-------|---|---------|--------|-----|
| 7440-41-7 | Beryllium | 0.531  | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-47-3 | Chromium  | 0.549  | mg/L  |   | 0.0100  | 0.0200 | 1   |
| 7439-96-5 | Manganese | 2.14   | mg/L  |   | 0.00500 | 0.0100 | 1   |
| 7440-23-5 | Sodium    | 109    | mg/L  |   | 0.200   | 0.300  | 1   |
| 7440-62-2 | Vanadium  | 0.521  | mg/L  |   | 0.00700 | 0.0200 | 1   |
| 7440-66-6 | Zinc      | 1.07   | mg/L  |   | 0.0200  | 0.0600 | 1   |

7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
 Fraction: METALS  
 Units: mg/L

Batch: P607418  
 Matrix: Water

Original Sample 0607162-04

Lab Sample ID for MS : P607418-MS1

| Analyte   | Original<br>Amount | SPIKE<br>ADDED | MS<br>Amount | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|-----------|--------------------|----------------|--------------|------|------------|------------------|-----|
|           |                    |                |              |      |            | LCL              | UCL |
| Beryllium | 0                  | 0.500          | 0.530        | 106  |            | 80               | 120 |
| Chromium  | 0                  | 0.500          | 0.543        | 109  |            | 80               | 120 |
| Manganese | 0.00555            | 2.00           | 2.13         | 106  |            | 80               | 120 |
| Sodium    | 1.65               | 100            | 109          | 107  |            | 80               | 120 |
| Vanadium  | 0                  | 0.500          | 0.515        | 103  |            | 80               | 120 |
| Zinc      | 0                  | 1.00           | 1.06         | 106  |            | 80               | 120 |

7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
 Fraction: METALS  
 Units: mg/L

Batch: P607418  
 Matrix: Water

Original Sample 0607162-04

Lab Sample ID for MSD P607418-MSD1

| Analyte   | Original<br>Amount | SPIKE<br>ADDED | MSD<br>Amount | %REC | QC<br>FLAG | MS/MSD<br>RPD | RPD<br>FLAG | % REC QC. LIMITS |     |     |
|-----------|--------------------|----------------|---------------|------|------------|---------------|-------------|------------------|-----|-----|
|           |                    |                |               |      |            |               |             | LCL              | UCL | RPD |
| Beryllium | 0                  | 0.500          | 0.531         | 106  |            | 0.189         |             | 80               | 120 | 25  |
| Chromium  | 0                  | 0.500          | 0.549         | 110  |            | 1.10          |             | 80               | 120 | 25  |
| Manganese | 0.00555            | 2.00           | 2.14          | 107  |            | 0.468         |             | 80               | 120 | 25  |
| Sodium    | 1.65               | 100            | 109           | 107  |            | 0.00          |             | 80               | 120 | 25  |
| Vanadium  | 0                  | 0.500          | 0.521         | 104  |            | 1.16          |             | 80               | 120 | 25  |
| Zinc      | 0                  | 1.00           | 1.07          | 107  |            | 0.939         |             | 80               | 120 | 25  |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Instrument ID: ICPMS  
Analytical Method: 6010B  
Preparation: EPA 3010A  
Batch: P607418

Sample ID:  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607418-PS1  
Dilution Factor: 1.00  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/30/06 10:58  
Date Received: 07/27/06 10:48

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR     | MQL    |
|-----------|-----------|--------|-------|---|---------|--------|
| 7440-41-7 | Beryllium | 0.534  | mg/L  |   | 0.00500 | 0.0100 |
| 7440-47-3 | Chromium  | 0.548  | mg/L  |   | 0.0100  | 0.0200 |
| 7439-96-5 | Manganese | 2.14   | mg/L  |   | 0.00500 | 0.0100 |
| 7440-23-5 | Sodium    | 109    | mg/L  |   | 0.200   | 0.300  |
| 7440-62-2 | Vanadium  | 0.519  | mg/L  |   | 0.00700 | 0.0200 |
| 7440-68-6 | Zinc      | 1.07   | mg/L  |   | 0.0200  | 0.0600 |

5 - Equivalent

INORGANICS ANALYSIS DATA SHEET / Post Digestion Spike Summary Sheet

Lab Name: Analytical Management Laboratories, Inc.

Analytical Batch: 6G30003

Fraction: METALS

Prep Batch: P607418

| COMPOUND  | Original<br>Amount | SPIKE<br>ADDED | PDS<br>Amount | PDS %<br>REC# | PDS %        | QC. LIMITS |     |
|-----------|--------------------|----------------|---------------|---------------|--------------|------------|-----|
|           |                    |                |               |               | REC#<br>FLAG | LCL        | UCL |
| Beryllium | ND                 | 0.500          | 0.534         | 107           |              | 75         | 125 |
| Chromium  | ND                 | 0.500          | 0.548         | 110           |              | 75         | 125 |
| Manganese | 0.00555            | 2.00           | 2.14          | 107           |              | 75         | 125 |
| Sodium    | 1.65               | 100            | 109           | 107           |              | 75         | 125 |
| Vanadium  | ND                 | 0.500          | 0.519         | 104           |              | 75         | 125 |
| Zinc      | ND                 | 1.00           | 1.07          | 107           |              | 75         | 125 |

\* Values outside of QC limits

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Soil  
Initial/Final:  
% Solids:  
Instrument ID: ICPMS  
Analytical Method: 6010B  
Preparation: P607418  
Batch: 6G30003

Sample ID: Serial Dilution  
Project: Cedartown, DO# 0049  
Project Num: 0607182  
Lab Sample ID: 6G30003-SRD1  
Dilution Factor: 5.00  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/30/06 10:29  
Date Received: 07/27/06 10:48

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR  | MQL  |
|-----------|-----------|--------|-------|---|------|------|
| 7440-41-7 | Beryllium |        | mg/L  | U | 1.00 | 2.00 |
| 7440-47-3 | Chromium  |        | mg/L  | U | 2.00 | 4.00 |
| 7439-96-5 | Manganese |        | mg/L  | U | 1.00 | 2.00 |
| 7440-23-5 | Sodium    |        | mg/L  | U | 40.0 | 60.0 |
| 7440-62-2 | Vanadium  |        | mg/L  | U | 1.40 | 4.00 |
| 7440-86-8 | Zinc      |        | mg/L  | U | 4.00 | 12.0 |

## 8 - Equivalent

## INORGANICS ANALYSIS DATA SHEET / Serial Dilution Summary Sheet

Lab Name: Analytical Management Laboratories, Inc.Analytical Batch: 8G30003Fraction: METALSOrig HSN: 0607162-04SD HSN: 8G30003-SRD1

Orig Dil: 1

SD Dil: 5

| COMPOUND  | Original<br>Amount | SD Amount | %D | D %<br>FLAG | QC. LIMIT<br>UCL |
|-----------|--------------------|-----------|----|-------------|------------------|
| Beryllium | U                  | U         | NA |             | 10               |
| Chromium  | U                  | U         | NA |             | 10               |
| Manganese | 0.00555            | U         | NA |             | 10               |
| Sodium    | 1.65               | U         | NA |             | 10               |
| Vanadium  | U                  | U         | NA |             | 10               |
| Zinc      | U                  | U         | NA |             | 10               |

\* Values outside of QC limits

**QAQC Analysis Data Sheets**  
(Form I equivalents, QCAF Form, Recovery Forms)

**0607162**  
(Sample Delivery Group, SDG)

**6020A**  
(parameter)

**P607419**  
(Analytical Batch)



# Quality Control Association Form

Lab Name: Analytical Management Laboratories, Inc.  
QC Batch: P607419

Fraction: METALS

| Date Analyzed | Date Prepared | Lab Sample ID | Original Sample | Sample Type      | Project Number |
|---------------|---------------|---------------|-----------------|------------------|----------------|
| 7/29/06       | 7/28/06       | 0607162-01    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-02    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-03    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-04    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-05    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-06    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-07    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-08    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/28/06       | 0607162-09    |                 | SAMPLE           | 0607162        |
| 7/29/06       | 7/29/06       | 6G29003-SRD1  | 0607162-04      | Serial Dilution  | 0607162        |
| 7/29/06       | 7/28/06       | P607419-BLK1  |                 | Method Blank     | 0607162        |
| 7/29/06       | 7/28/06       | P607419-BS1   |                 | LCS              | 0607162        |
| 7/29/06       | 7/28/06       | P607419-BSD1  |                 | LCS Dup          | 0607162        |
| 7/29/06       | 7/28/06       | P607419-MS1   | 0607162-04      | Matrix Spike     | 0607162        |
| 7/29/06       | 7/28/06       | P607419-MSD1  | 0607162-04      | Matrix Spike Dup | 0607162        |
| 7/29/06       | 7/28/06       | P607419-PS1   | 0607162-04      | Post Spike       | 0607162        |

Lab Reviewed by

JT Schriber

Date Reviewed

7/30/06

Date Printed Sunday, July 30, 2006

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419

Sample ID: Method Blank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607419-BLK1  
Date Collected:  
Date Analyzed: 07/29/06 20:07  
Date Received:  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | ML   | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     |        | ug/L  | U | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419

Sample ID: LCS  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607419-BS1  
Date Collected:  
Date Analyzed: 07/29/06 20:11  
Date Received:  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | MQL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 503    | ug/L  |   | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  | 50.7   | ug/L  |   | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419

Sample ID: LCS Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607419-BSD1  
Date Collected:  
Date Analyzed: 07/29/06 20:17  
Date Received:  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | ML   | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 507    | ug/L  |   | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  | 50.5   | ug/L  |   | 0.500 | 1.00 | 1   |

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.

Batch: P607419

Fraction: METALS

Matrix: Water

Units: ug/L

Lab Sample ID: P607419-BS1

| Analyte | SPIKE<br>ADDED | LCS<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|---------|----------------|---------------|------|------------|------------------|-----|
|         |                |               |      |            | LCL              | UCL |
| Lead    | 500            | 503           | 101  |            | 80               | 120 |
| Cadmium | 50.0           | 50.7          | 101  |            | 80               | 120 |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 2

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: METALS  
Units: ug/L

Batch: P607419  
Matrix: Water

Lab Sample ID: P607419-BSD1

| Analyte | SPIKE<br>ADDED | LCSD<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     | LCS/LCSD<br>RPD |
|---------|----------------|----------------|------|------------|------------------|-----|-----------------|
|         |                |                |      |            | LCL              | UCL |                 |
| Lead    | 500            | 507            | 101  |            | 80               | 120 | 0.792           |
| Cadmium | 50.0           | 50.5           | 101  |            | 80               | 120 | 0.395           |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 2

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419

Sample ID: Matrix Spike  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607419-MS1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/29/06 21:01  
Date Received: 07/27/06 10:48  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | MQL  | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 509    | ug/L  |   | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  | 50.7   | ug/L  |   | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419

Sample ID: Matrix Spike Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607419-MSD1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/29/06 21:07  
Date Received: 07/27/06 10:48  
Date Prepared: 07/28/06 06:14

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | ML   | DIL |
|-----------|----------|--------|-------|---|-------|------|-----|
| 7439-92-1 | Lead     | 508    | ug/L  |   | 0.500 | 1.00 | 1   |
| 7440-43-9 | Cadmium  | 50.1   | ug/L  |   | 0.500 | 1.00 | 1   |



7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.

Batch: P607419

Fraction: METALS

Matrix: Water

Units: ug/L

Original Sample 0607162-04

Lab Sample ID for MS : P607419-MS1

| Analyte | Original<br>Amount | SPIKE<br>ADDED | MS<br>Amount | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|---------|--------------------|----------------|--------------|------|------------|------------------|-----|
|         |                    |                |              |      |            | LCL              | UCL |
| Lead    | 0                  | 500            | 509          | 102  |            | 75               | 125 |
| Cadmium | 0                  | 50.0           | 50.7         | 101  |            | 75               | 125 |

7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
 Fraction: METALS  
 Units: ug/L

Batch: P607419  
 Matrix: Water

Original Sample 0607162-04

Lab Sample ID for MSD P607419-MSD1

| Analyte | Original<br>Amount | SPIKE<br>ADDED | MSD<br>Amount | %REC | QC<br>FLAG | MS/MSD<br>RPD | RPD<br>FLAG | % REC QC. LIMITS |     |     |
|---------|--------------------|----------------|---------------|------|------------|---------------|-------------|------------------|-----|-----|
|         |                    |                |               |      |            |               |             | LCL              | UCL | RPD |
| Lead    | 0                  | 500            | 508           | 102  |            | 0.197         |             | 75               | 125 | 20  |
| Cadmium | 0                  | 50.0           | 50.1          | 100  |            | 1.19          |             | 75               | 125 | 20  |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Instrument ID: ICPMS  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P607419

Sample ID: Post Spike  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P607419-PS1  
Dilution Factor: 1.00  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/29/06 21:13  
Date Received: 07/27/06 10:48

| CAS NO.   | COMPOUND | RESULT | Units | Q | LLR   | ML   |
|-----------|----------|--------|-------|---|-------|------|
| 7439-92-1 | Lead     | 485    | ug/L  |   | 0.500 | 1.00 |
| 7440-43-9 | Cadmium  | 48.2   | ug/L  |   | 0.500 | 1.00 |

5 - Equivalent

INORGANICS ANALYSIS DATA SHEET / Post Digestion Spike Summary Sheet

Lab Name: Analytical Management Laboratories, Inc.

Analytical Batch: 6G29003

Fraction: METALS

Prep Batch: P607419

| COMPOUND | Original<br>Amount | SPIKE<br>ADDED | PDS<br>Amount | PDS %<br>REC# | PDS %<br>REC#<br>FLAG | QC. LIMITS<br>LCL UCL |
|----------|--------------------|----------------|---------------|---------------|-----------------------|-----------------------|
| Lead     | ND                 | 500            | 485           | 97.0          |                       | 75 125                |
| Cadmium  | ND                 | 50.0           | 48.2          | 96.4          |                       | 75 125                |

\* Values outside of QC limits

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.Client ID: USACE SavannahMatrix: Water

Initial/Final:

% Solids:

Instrument ID: ICPMSAnalytical Method: 6020APreparation: P607419Batch: 6G29003

Sample ID:

Project:

Project Num:

Lab Sample ID:

Dilution Factor:

Date Collected:

Date Analyzed:

Date Received:

Serial DilutionCedartown, DO# 004906071626G29003-SRD15.0007/20/06 17:5007/29/06 20:5607/27/06 10:48

## CAS NO.

7439-92-1

7440-43-9

## COMPOUND

Lead

Cadmium

## RESULT

## Units

ug/L

ug/L

## Q

U

U

## LLR

2.50

2.50

## MQL

5.00

5.00

## 8 - Equivalent

## INORGANICS ANALYSIS DATA SHEET / Serial Dilution Summary Sheet

Lab Name: Analytical Management Laboratories, Inc.Analytical Batch: 6G29003Fraction: METALSOrig HSN: 0607162-04SD HSN: 6G29003-SRD1Orig Dil: 1SD Dil: 5

| COMPOUND | Original<br>Amount | SD Amount | %D | D %<br>FLAG | QC. LIMIT<br>UCL |
|----------|--------------------|-----------|----|-------------|------------------|
| Lead     | U                  | U         | NA |             | 10               |
| Cadmium  | U                  | U         | NA |             | 10               |

\* Values outside of QC limits

**QAQC Analysis Data Sheets**  
(Form I equivalents, QCAF Form, Recovery Forms)

**0607162**  
(Sample Delivery Group, SDG)

**Sulfate/Chloride**  
(parameter)

**P608013**  
(Analytical Batch)

# Quality Control Association Form

Lab Name: Analytical Management Laboratories, Inc.  
QC Batch: P608013

Fraction: WET Cl, SO<sub>4</sub>

| Date Analyzed | Date Prepared | Lab Sample ID | Original Sample | Sample Type      | Project Number |
|---------------|---------------|---------------|-----------------|------------------|----------------|
| 7/31/06       | 7/31/06       | 0607162-01    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-02    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-03    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-04    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-05    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-06    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-07    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-08    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | 0607162-09    |                 | SAMPLE           | 0607162        |
| 7/31/06       | 7/31/06       | P608013-BLK1  |                 | Method Blank     | 0607162        |
| 7/31/06       | 7/31/06       | P608013-BS1   |                 | LCS              | 0607162        |
| 7/31/06       | 7/31/06       | P608013-BSD1  |                 | LCS Dup          | 0607162        |
| 7/31/06       | 7/31/06       | P608013-MS1   | 0607162-04      | Matrix Spike     | 0607162        |
| 7/31/06       | 7/31/06       | P608013-MSD1  | 0607162-04      | Matrix Spike Dup | 0607162        |

Batch Reviewed by KEL

Date Reviewed 8/1/06

Date Printed Tuesday, August 1, 2006



## 1A - Equivalent

## ORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013

Sample ID: Method Blank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P608013-BLK1  
Date Collected:  
Date Analyzed: 07/31/06 13:57  
Date Received:  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | ML    | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride |        | mg/L  | U | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  |        | mg/L  | U | 0.200 | 1.00  | 1   |

## 1A - Equivalent

## ORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013

Sample ID: LCS  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P608013-BS1  
Date Collected:  
Date Analyzed: 07/31/06 13:57  
Date Received:  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MLL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 11.0   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 22.3   | mg/L  |   | 0.200 | 1.00  | 1   |

## 1A - Equivalent

## ORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013

Sample ID: LCS Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P608013-BSD1  
Date Collected:  
Date Analyzed: 07/31/06 13:57  
Date Received:  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | SQL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 11.0   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 22.2   | mg/L  |   | 0.200 | 1.00  | 1   |

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: WET  
Units: mg/L

Batch: P608013  
Matrix: Water

Lab Sample ID: P608013-BS1

| Analyte  | SPIKE<br>ADDED | LCS<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|----------|----------------|---------------|------|------------|------------------|-----|
|          |                |               |      |            | LCL              | UCL |
| Chloride | 10.0           | 11.0          | 110  |            | 80               | 120 |
| Sulfate  | 20.0           | 22.3          | 112  |            | 80               | 120 |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 2

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: WET  
Units: mg/L

Batch: P608013  
Matrix: Water

Lab Sample ID: P608013-BSD1

| Analyte  | SPIKE<br>ADDED | LCSD<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     | LCS/LCSD<br>RPD |
|----------|----------------|----------------|------|------------|------------------|-----|-----------------|
|          |                |                |      |            | LCL              | UCL |                 |
| Chloride | 10.0           | 11.0           | 110  |            | 80               | 120 | 0.00            |
| Sulfate  | 20.0           | 22.2           | 111  |            | 80               | 120 | 0.449           |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 2

## 1A - Equivalent

## ORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013

Sample ID: Matrix Spike  
Project: Cedartown, DO# 0049  
Project Num: 0807162  
Lab Sample ID: P608013-MS1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | MLL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 23.5   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 58.9   | mg/L  |   | 0.200 | 1.00  | 1   |

## 1A - Equivalent

## ORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 1 mL / 1 mL  
% Solids:  
Analytical Method: 300.0  
Preparation: NO PREP  
Batch: P608013

Sample ID: Matrix Spike Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P608013-MSD1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 07/31/06 13:57  
Date Received: 07/27/06 10:48  
Date Prepared: 07/31/06 13:55

| CAS NO.    | COMPOUND | RESULT | Units | Q | LLR   | SQL   | DIL |
|------------|----------|--------|-------|---|-------|-------|-----|
| 16887-00-6 | Chloride | 23.2   | mg/L  |   | 0.100 | 0.500 | 1   |
| 14808-79-8 | Sulfate  | 57.8   | mg/L  |   | 0.200 | 1.00  | 1   |

7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.

Batch: P608013

Fraction: WEI

Matrix: Water

Units: mg/L

Original Sample 0607162-04

Lab Sample ID for MS: P608013-MS1

| Analyte  | Original<br>Amount | SPIKE<br>ADDED | MS<br>Amount | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|----------|--------------------|----------------|--------------|------|------------|------------------|-----|
|          |                    |                |              |      |            | LCL              | UCL |
| Chloride | 0.977              | 20.0           | 23.5         | 113  |            | 80               | 120 |
| Sulfate  | 14.9               | 40.0           | 58.9         | 110  |            | 80               | 120 |



7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Name: Analytical Management Laboratories, Inc.  
 Fraction: WET  
 Units: mg/L

Batch: P608013  
 Matrix: Water

Original Sample 0607162-04

Lab Sample ID for MSD P608013-MSD1

| Analyte  | Original Amount | SPIKE ADDED | MSD Amount | %REC | QC FLAG | MS/MSD RPD | RPD FLAG | % REC QC. LIMITS |     |     |
|----------|-----------------|-------------|------------|------|---------|------------|----------|------------------|-----|-----|
|          |                 |             |            |      |         |            |          | LCL              | UCL | RPD |
| Chloride | 0.977           | 20.0        | 23.2       | 111  |         | 1.28       |          | 80               | 120 | 20  |
| Sulfate  | 14.9            | 40.0        | 57.8       | 107  |         | 1.89       |          | 80               | 120 | 20  |



Analytical Management Laboratories, Inc.

10100 South Nether, Omaha, Nebraska 68137  
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e-mail: aml@amlabinc.com

September 18, 2006

Mr. Mark S. Harvison  
Project Chemist, CESAS-EN-GG  
U.S. Army Corps of Engineers, Savannah District  
100 W. Oglethorpe Ave.  
P. O. Box 889  
Savannah, GA 31402  
Phone: 912-652-5151  
Fax: 912-652-5311

Dear Mr. Harvison:

RE: Cedartown Landfill - Report Addendum  
W912HN05-D-0013, Task Order # 0049  
AML Work Order Number: 0607162

Attached, please find the hardcopy analytical report (\_\_\_\_\_ total pages) for environmental samples collected by CESAS for the project described above. Problems encountered in the analysis of these samples are documented in the laboratory case narrative dated August 3, 2006 for the original report and in this report addendum for the reanalysis for Beryllium by ICP/MS. The electronic data deliverables (EDDs) for this report will be e-mailed within a few days of this report. Please feel free to contact me by phone (913-829-0101-ext. 26), fax (913-829-1181) or email (tviswanathan@amlabinc.com) if you have any questions.

Respectfully Submitted,  
Analytical Management Laboratories, Inc.

Vis Viswanathan, Ph. D.  
QA Director

## General Case Narrative

|                 |                                      |
|-----------------|--------------------------------------|
| Project:        | Cedartown Landfill – Report Addendum |
| Your Reference: | W912HN05-D-0013, Task Order # 0049   |
| Our Reference:  | AML Work Order Number: 0607162       |

### Project and Sample Information

Task order information, completed copies of the chain of custody forms (COC), and Analytical Management Laboratories (AML) sample condition upon receipt form (s), and task order information were included in the Sample Information section of the original report. The AML laboratory information management system (LIMS)-generated sample status and receipt report, showing field sample identifiers and corresponding laboratory identifiers was also included. For the report addendum, copies of the COC and login reports are included in this section.

### Reports

The hardcopy laboratory reports and electronic data deliverables (EDDs) were prepared using the new Promium Element Data System (LIMS). Under the procedure used by the laboratory, the hardcopy reports are actually generated using information contained in a database, which is also used to generate electronic deliverables. This procedure was implemented to assure data integrity between the two media. The attached report is organized as follows:

#### Cover Letter

#### Laboratory Case Narrative

#### Sample Information

Sample Result Forms, organized in the following order: by fraction and by sample.

QC Summary organized in the following order: by fraction, by matrix, and by analytical batch number. The QC Summary for each analytical batch contain the following, when applicable:

1. QC Association Form or Method Blank Summary (EPA CLP Form-4 equivalents)
2. Surrogate Recovery Summary, when applicable (EPA CLP Form-2 equivalents)
3. Method Blank (MB) Results (EPA CLP Form-1 equivalents)
4. Laboratory Control Sample (LCS) Results (EPA Form-1 equivalents)
5. LCS duplicate (LCSD) Results (EPA Form-1 equivalents), when available
6. LCS Recoveries Summary (EPA Form-3 equivalents)
7. LCSD (when applicable) Recoveries and RPD Summary (EPA Form-3 equivalents)
8. Matrix Spike (MS) Results (EPA Form-1 equivalents)
9. MS duplicate (MSD) Results (EPA CLP Form-1 equivalents)
10. MS Recoveries Summary (EPA Form-3 equivalents); and
11. MSD Recoveries and RPD Summary (EPA CLP Form-3 equivalents)

### Sample Result Forms

Sample results are shown on modified CLP Form 1 equivalents with the following qualifiers:

U = Not detected or detected below method detection limit (MDL) or the lowest level for reporting (LLR).

J = Detected above MDL or LLR but below the method quantitation limit (MQL).

J = RPD >40% between primary and confirmation column results for GC and HPLC methods.

E = Detected at levels in excess of the upper calibration limit.

R = Rejected due to significant QA outliers.

I = Invalidated by the laboratory for reasons that are provided in the test-specific narrative.

Method detection limits (MDLs), lowest level for reporting (LLRs) and method quantitation limits (MQLs) have been adjusted for sample weight or volume, dilution, and percent solids, when applicable. The MDLs are statistically defined quantities, which are used as LLRs for some test parameters. When MDLs are extremely low and not achievable on a routine basis, LLRs, which are greater than MDL but typically one-half of the applicable MQLs are used to define the cut-off points for reporting positive results. The MQLs are typically the lowest point on the calibration curve that have been adjusted for the matrix and sample preparation procedures. The MQLs are equivalent to the practical quantitation limits (PQLs) or reporting limits (RL), which are commonly used by other environmental laboratories.

Quantitative results for analytes detected in the sample (positive results) are shown under the column labeled "Result". Results coded with the qualifier E should not be used unless additional analyses were unavailable due to other limitations. Data coded as E should not be compared to other data since non-linearity in calibration may be a severe problem for some analytes.

Multiple sample result forms may be provided for one or more of the following reasons, if in the professional judgment of the laboratory that sample results for a given compound may be more accurate from one of the multiple analyses:

Sample was reanalyzed for surrogate recovery outliers;

Sample was reanalyzed at a dilution;

One of the analyses was performed outside holding times; and

A replicate analysis was performed for internal quality control purposes

#### **QC Association Forms**

The list consisting of MB, LCS, LCSD (if any), MS (whenever available), MSD (whenever available), and field samples associated with each QC batch are shown on QC Association Forms, which are CLP Form-4 equivalents. Additional items such as PDS, SD (and CCAL) may be included for some parameters. Separate forms are included for each QC batch for each matrix and fraction. The QC batch numbers shown on these reports are based on LIMS.

#### **Surrogate Recovery Forms (when applicable)**

A summary of the system monitoring compound recoveries for organic analyses is included in this section. EPA CLP Form 2 equivalents are used to report surrogate

recoveries. The QC limits from the Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 2, June 2002 (DoD QSM) is used with the exception of VOCs since limits are incomplete for all the surrogates in soil. The QC limits from USACE EM 200-1-3, Appendix I (Shell) are used for VOCs. The Shell document requires limits for controlled matrices (MB, LCS, and LCSD) to be tighter than those for actual matrix samples (MS, MSD, and samples). Corrective action involving re-extraction and/or reanalysis is performed for samples that exceed the surrogate QC limits. Specific corrective action procedures employed for this project and test-specific requirements are described in parameter-specific case narratives.

#### **Method Blank Result Forms**

Laboratory method blank samples were analyzed with each QC batch as described in the QC Association Form. Analytical results for method blanks are shown on CLP Form 1 equivalents. They include data for all target compounds/analytes and surrogates. The MB amount should not exceed one half of the applicable MQL for each target analyte with the exception of common laboratory contaminants. The source of contamination is investigated, corrected, and reanalysis performed whenever possible if the blank contamination above one half of the MQL exceeds 1/10 of the specified regulatory limit and/or the measured concentration of any sample in the associated QC sample batch. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Laboratory Control Sample (LCS) Report Forms**

Laboratory control samples were analyzed with each QC batch as described in the QC Association Form. LCS results of these QC analyses are shown in CLP Form 1. LCS recoveries and RPDs for duplicates (if performed) are shown on EPA Form-3 equivalents. The laboratory statistical control (3-sigma) and marginal (4-sigma) exceedence (ME) limits are compared periodically with QC limits from DoD QSM, which are used as default limits in this report. When the 3-sigma control limit is exceeded for any analyte, associated data is flagged "ME" and 4-sigma ME limits are applied automatically. The total number of method analytes, and the number of ME analytes are tracked and compared against the number allowed per DoD QSM. This information is also provided at the bottom of each Form-3 report. Analytes with LCS recoveries that exceed the 4-sigma limits are flagged ME\* and reanalysis will be required for the affected analyte if it is a contaminant of concern. If the number of marginal exceedences are greater than those allowed by DoD QSM, reanalysis of the affected QC batch is performed. The relative percent difference (RPDs) for the LCS duplicates, a voluntary laboratory QC parameter is also computed to track in-house precision and provided on Form-3 reports for duplicates. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Matrix Spike/Matrix Spike Duplicate Recoveries Report Forms**

The MS/MSD results are shown in EPA CLP Form-1 equivalents. See section on LCS for additional details. The RPDs for MS duplicates that are outside the applicable QC limits are flagged with an asterisk (\*). The effect of matrix is taken into account in determining corrective action procedures based on MS and MSD results, recoveries, and

RPD. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Calibration**

Instruments were calibrated in accordance with applicable method. Deviations are shown in parameter-specific case narratives. Copies of initial calibration and calibration verification summaries and associated raw data will be maintained in project files and made available for detailed client review, if necessary.

#### **Test Methods and Holding Times**

Analyses were performed within applicable holding times except as noted in parameter-specific case narratives.

#### **Batch-specific Quality Control Procedures**

Quality control data from method blanks and laboratory control samples are used as batch QC elements. In accordance with EPA, USACE, and DoD guidelines, QC data from matrix spikes are used as matrix-specific QC elements and QC data from surrogates, internal standard areas, etc. are used as sample-specific QC elements. When the batch QC elements are outside their QC limits, results for associated samples are evaluated and corrective actions that affect the entire sample set are performed. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Matrix-specific or Sample-specific Quality Control Procedures**

Sample concentrations exceeding the upper calibration limit, surrogate recoveries outside the QC limits, calibration parameters (e.g. ICAL, CALV, ICV, CCV, ICB, CCB, etc.) not within QC limits, etc. are used as sample-specific and/or sample-group specific QC elements for one or more associated samples during instrumental analysis. Serial dilution, standard addition, MS recoveries, etc. are used as matrix-specific QC elements for one or more associated samples. When these QC elements are outside their QC limits, associated individual sample results are evaluated and appropriate corrective actions are performed. Specific corrective action procedures employed for this project are described in parameter-specific case narratives.

#### **Manual Integration**

Manual integration operations that have potential to improve accuracy of analysis are performed, as necessary (shown with a "M" flag on raw data) based on visual inspection of peak shapes for each target analyte. Such operations are technically defensible and they are not aimed at meeting the minimum technical requirements of the analytical procedure.

#### **Statement**

To the best of our knowledge, this data package is in compliance with the terms and conditions of the contract/purchase order/delivery order/task order as applicable, both technically and for completeness, for other than the conditions detailed in this case narrative. The quality assurance manager or his designee, as verified by the signature on the cover letter has authorized release of data contained in this report. In accordance with

NELAP guidelines and our certificate (No. E-10254) requirements, this report has been paginated and it may not be reproduced for distribution, except in full, without written approval from Analytical Management Laboratories.

## Project-specific Case Narrative

|                 |                                      |
|-----------------|--------------------------------------|
| Project:        | Cedartown Landfill – Report Addendum |
| Your Reference: | W912HN05-D-0013, Task Order # 0049   |
| Our Reference:  | AML Work Order Number: 0607162       |

### Project and Sample Information

Nine (9) environmental samples (9 aqueous and 0 non-aqueous) metals (Be, Cd, Cr, Pb, V, Zn, Na, and Mn) and anions (chloride and sulfate). Additional containers of one of the aqueous samples (0607162-04) were collected for MS/MSD analyses. An initial complete report dated August 3, 2006 was submitted to the client and the client requested reanalysis of the samples or sample digestates by ICP/MS for beryllium to obtain a lower detection limit. This report addendum contains data only for Beryllium at lower detection limits.

### Metals – General

Aqueous samples are digested using AML SOPs based on SW-846 3010 and 3020 methods and soil samples are digested using the AML SOP based on the SW-846 3050 method. The digestates are analyzed using two AML SOPs based on SW-846 instrumental analysis methods: 6010 (ICP-AES) and SW-846 6020 (ICP-MS). The ICP-MS analytical data are reported for analytes (Sb, As, Pb, Hg, Se, and Tl) requiring detection limits lower than those achievable by ICP-AES. In accordance with the conventional practice, aqueous sample results are reported in mg/L for ICP-AES (6010) analysis and in µg/L for ICP-MS (6020) analysis. The soil sample results are reported in mg/kg units for both methods. Corrective actions were attempted in response to QC outliers as discussed below. When corrective action was not successful, data released by the laboratory may require qualifications for usability in accordance with client procedures and project requirements.

### Metals – 6010B

Original analysis for some of the metals, Be, Cr, Mn, Na, V, and Zn were performed by ICP/AES by method 6010. Lower detection limits for Be from ICP/MS analysis was requested, which prompted reanalysis of the samples on ICP/MS by Method 6020.

### Metals – 6020A

#### Initial Calibration (ICAL)

The instrument was standardized for TAL metals including mercury using a calibration blank and one ICAL standard (10-µg/L, 100-µg/L, or 10000-µg/L depending on analyte). For ICAL to be acceptable, the %RSDs for triplicate analysis should be within QC limits (<5%).

QC outliers requiring corrective action: None.

#### High Level Standard (HLSTD)

In addition to dynamic linear range studies/verification that are performed quarterly, AML has implemented the analysis of a daily high level standard containing all the TAL metal analytes with concentrations ranging from 50-µg/L for Hg, 500 to 1000-µg/L for



most analytes and as high as 100,000- $\mu\text{g/L}$  for the minerals, aluminum, and iron. For the HLSTD to be acceptable, the percent recoveries for HLSTD should be within QC limits ( $\pm 10\%$ ).

QC outliers requiring corrective action: None.

#### Low Level Standard (CRI or MQL)

The accuracy of analysis at low levels is verified by analyzing the CRI standard that contains target analytes at the MQLs. For the CRI to be acceptable, the percent recoveries should be within QC limits ( $\pm 20\%$ ).

QC outliers requiring corrective action: None.

#### Initial Calibration Verification (ICV)

A second source standard was employed for the ICV. For ICV to be acceptable, the percent recoveries in ICV should be within QC limits ( $\pm 10\%$ ). The %RSDs for triplicate analysis should also be within QC limits ( $<5\%$ ).

QC outliers requiring corrective action: None.

#### Initial Calibration Blank (ICB)

For the ICB to be acceptable, the target analytes, when present should be at levels that are less than one half of the applicable method quantitation limits (MQLs).

QC outliers requiring corrective action: None.

#### Interference Check Standards (ICSA & ICSAB)

A set of interference check standards (ICSA and ICSAB) are analyzed at the beginning of the analytical sequence. Ideally, for the ICSA to be acceptable, the target analytes, when present should be at levels that are less than one half of the applicable method quantitation limits (MQLs). However, ICSA standards containing low levels of target analytes that also contain high levels of 6020 method interferences are not commercially available. Inter-element correction for ICP-MS is in its infancy. Therefore, the ICSA results are used for overall evaluation of the instrument. The percent recoveries in ICSAB should be within QC limits ( $\pm 20\%$ ) for target analytes.

QC outliers requiring corrective action: None.

#### Continuing Calibration Verification (CCVs)

For CCVs to be acceptable, the percent recoveries for applicable CCVs should be within QC limits ( $\pm 10\%$ ) and the %RSDs for triplicate analysis should be within QC limits ( $<5\%$ ).

QC outliers requiring corrective action: None.

#### Continuing Calibration Blanks (CCBs)

For CCBs to be acceptable, target analytes, when present in applicable CCBs should be at levels that are less than one half of the applicable method quantitation limits (MQLs).

QC outliers: The RSD for Se on one of the CCVs was slightly high at 5.4%. This had no impact on data quality as evidenced by LCS, MS, and PDS recoveries close to 100%.

#### Project Samples

Original analysis of the samples on ICP/MS was performed for Cd and Pb. The element, Be was not included in the list of target analytes for the original analysis. The original samples, which were preserved with nitric acid and kept in the cooler at 4C were used for redigestion and reanalysis for Be. No significant problems were observed for any of the samples with the following exception(s):

Water - QC Batch P609207: Observed results were in agreement with the results obtained earlier by ICP/AES. One of the samples (0607162-06) contained trace amounts of Be at the lowest level for reporting (LLR of 0.50 µg/L), while all other samples contained Be at levels that were lower than LLR.

#### **Batch QC Samples**

##### **Method Blank**

No significant anomalies were noted. The target analytes, when present were at levels that were less than one half of the applicable method quantitation limits (MQLs).

Water - QC Batch P609207: None.

##### **Laboratory Control Sample (LCS and/or LCSD) Recoveries**

The DoD QSM LCS control (80-120 for water and soil) and marginal exceedence limits (see below) provided for Method 6010 have been adopted by the laboratory for the 6020 method. These are listed in the LCS/LCSD recovery form for aqueous and soil samples. Since the method is used for less than 11 analytes, the number of allowed marginal exceedence is zero unless more analytes are reported using this method. See case narrative for ICP-AES method for additional details.

Water - QC Batch P609207: None.

##### **Matrix QC Samples**

##### **Matrix Spike (MS and/or MSD) Recoveries**

The SW-846 limits for Method 6010, which are identical to the USACE Shell QC limits (75% to 125% for aqueous and soil samples) for 6010 are extended to the 6020 method. Analytes that may have recoveries outside the QC limits in the MS sample may be within the QC limits in the MSD sample.

Water - QC Batch P609207: None.

##### **Matrix Spike Duplicates**

The %RPD for matrix spike duplicate results are calculated to assess precision. The USACE Shell QC limits for 6010 (25% for aqueous and soil samples) has been extended to the 6020 method.

Water - QC Batch P609207: None.

##### **Post Digestion Spike (PDS) Recoveries**

The USACE Shell QC limits (75% to 125% for aqueous and soil samples) are employed.

Water - QC Batch P609207: None.

##### **Serial Dilution**

The USACE Shell QC limits ( $\pm 10\%$  for soil and aqueous sample digestates) for percent difference (%D) between the original and serial dilution (SD) results are employed. In

accordance with USACE guidelines, the sample selected for matrix spike is also selected for SD analysis. Since most project samples contain very low levels of target analytes when present, the SD analysis is not applicable to most project samples. Data for analytes with SD concentrations less than 5 times the MQL (equivalent to SW-846 guidance, which is 25 times the estimated detection limits) cannot be evaluated. The SD analysis was not applicable to the project samples. The PDS analysis is used for the evaluation of matrix effects in conjunction with MS and MSD recovery data.

Water - QC Batch P609207: None when applicable.



Analytical Management Laboratories, Inc.

15130 South Keeler  
Olathe, Kansas 66062  
Phone (913) 829-0101  
Fax (913) 829-1181

40732

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Chain of Custody Record / Request for Analysis

Client Contact Name: M. Harrison  
Company Name: USA  
Address: 100 West Oakthorne Ave  
City, State, Zip: SAN ANTONIO, TX  
Phone #: (913) 652-5151 Ext:   
Fax #: (913) 829-0101  
Email:

Project Name: Celebration  
Project Number: 49  
Purchase Order Number:   
Project Due Date:   
Project Comments:   
Print Sampler's Name: H.C. Cooper

Analysis/Method to be Performed (Check all that apply)

| Laboratory Project Number: <u>0607162</u> |                    |         |      |        | Specify method # ---> |     |                  |      |                                |             |     |      |       |            |      |            |                  |     | Please include any information that may be useful in the analysis of the sample.<br>Example: high concentration<br>List analytes<br>MS/MSD |            |                  |           |          |           |           |
|---|--------------------|---------|------|--------|-----------------------|-----|------------------|------|--------------------------------|-------------|-----|------|-------|------------|------|------------|------------------|-----|--|------------|------------------|-----------|----------|-----------|-----------|
| Lab ID                                    | Sample Description | Date    | Time | Matrix | Total # Containers    | HCl | HNO <sub>3</sub> | NaOH | H <sub>2</sub> SO <sub>4</sub> | Unpreserved | 4°C | VOCs | SVOCs | Pesticides | PCBs | Herbicides | Metals (specify) | DRO | GRO  | Explosives | Anions (specify) | Substrate | Chloride | Comments: |           |
| 0607162-01                                | OW-3               | 7/20/06 | 1231 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |
| 0607162-02                                | OW-2               | 7/20/06 | 1405 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |
| 0607162-03                                | OW-4               | 7/20/06 | 1647 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |
| 0607162-04                                | OW-5               | 7/20/06 | 1750 | AG     | 9                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           | MS/MSD TR |
| 0607162-05                                | OW-12              | 7/20/06 | 1300 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |
| 0607162-06                                | OW-07-WP           | 7/20/06 | 1830 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |
| 0607162-07                                | OW-18              | 7/21/06 | 0850 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |
| 0607162-08                                | OW-6B              | 7/21/06 | 1000 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |
| 0607162-09                                | OW Blank           | 7/21/06 | 1200 | AG     | 3                     |     |                  |      |                                |             |     |      |       |            |      |            |                  |     |  |            |                  |           |          |           |           |

|                                 |                                     |                           |                                 |                           |
|---------------------------------|-------------------------------------|---------------------------|---------------------------------|---------------------------|
| C<br>U<br>S<br>T<br>O<br>D<br>Y | Relinquished By: <u>H.C. Cooper</u> | Date/Time: <u>7/20/06</u> | Received By: <u>[Signature]</u> | Date/Time: <u>7/27/06</u> |
|                                 | Relinquished By: <u></u>            | Date/Time: <u></u>        | Received By: <u></u>            | Date/Time: <u></u>        |

By signing the request (chain of custody) you are ordering work from Analytical Management Laboratories, Inc. which constitutes the acceptance of the terms and conditions on the back of this form.

|   |   |   |  |   |
|---|---|---|--|---|
| Delivery Method<br><input type="checkbox"/> Delivered to Person<br><input checked="" type="checkbox"/> Courier<br><input type="checkbox"/> Air Mail | Custody Seals<br><input type="checkbox"/> Intact<br><input type="checkbox"/> Broken | Coolant<br><input type="checkbox"/> Ice<br><input type="checkbox"/> Blue Ice<br><input type="checkbox"/> None | Cooler Temp.<br><input checked="" type="checkbox"/> Temp. Blank<br><input type="checkbox"/> Cooler | Receiving Comments:<br><u>AML 7/20/06: 21°C</u><br><u>AML 7/27/06: 20°C</u> |
|---|---|---|--|---|

0013

# **Analytical Management Laboratories - Sample Status and Receipt Report**

AML Project Number

0807162

Client AML ID

USACE Savannah

Client Project ID

Cedartown, DO# 0049

| AML Sample | Matrix | Client Sample ID | Date Collected | Projected Due Date | Analysis          | Comments                              |
|------------|--------|------------------|----------------|--------------------|-------------------|---------------------------------------|
| 0607162-01 | Water  | OW-3 ✓           | 07/20/06 12:31 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-01 | Water  | OW-3             | 07/20/06 12:31 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-01 | Water  | OW-3             | 07/20/06 12:31 | 08/06/06           | Sulfate by 300.0  |                                       |
| 0607162-01 | Water  | OW-3             | 07/20/06 12:31 | 08/06/06           | Chloride by 300.0 |                                       |
| 0607162-02 | Water  | OW-2 ✓           | 07/20/06 14:05 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-02 | Water  | OW-2             | 07/20/06 14:05 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-02 | Water  | OW-2             | 07/20/06 14:05 | 08/06/06           | Chloride by 300.0 |                                       |
| 0607162-02 | Water  | OW-2             | 07/20/06 14:05 | 08/06/06           | Sulfate by 300.0  |                                       |
| 0607162-03 | Water  | OW-4 ✓           | 07/20/06 16:47 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-03 | Water  | OW-4             | 07/20/06 16:47 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-03 | Water  | OW-4             | 07/20/06 16:47 | 08/06/06           | Chloride by 300.0 |                                       |
| 0607162-03 | Water  | OW-4             | 07/20/06 16:47 | 08/06/06           | Sulfate by 300.0  |                                       |
| 0607162-04 | Water  | OW-5 ✓           | 07/20/06 17:50 | 08/06/06           | Metals by 6020A   | MS MSD, Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-04 | Water  | OW-5             | 07/20/06 17:50 | 08/06/06           | Metals by 6010B   | MS MSD, Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-04 | Water  | OW-5             | 07/20/06 17:50 | 08/06/06           | Sulfate by 300.0  | MS MSD                                |
| 0607162-04 | Water  | OW-5             | 07/20/06 17:50 | 08/06/06           | Chloride by 300.0 | MS MSD                                |
| 0607162-05 | Water  | OW-Dup ✓         | 07/20/06 13:00 | 08/06/06           | Sulfate by 300.0  |                                       |
| 0607162-05 | Water  | OW-Dup           | 07/20/06 13:00 | 08/06/06           | Chloride by 300.0 |                                       |
| 0607162-05 | Water  | OW-Dup           | 07/20/06 13:00 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-05 | Water  | OW-Dup           | 07/20/06 13:00 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-06 | Water  | CL-07-WP ✓       | 07/20/06 18:30 | 08/06/06           | Chloride by 300.0 |                                       |
| 0607162-06 | Water  | CL-07-WP         | 07/20/06 18:30 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-06 | Water  | CL-07-WP         | 07/20/06 18:30 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn         |
| 0607162-06 | Water  | CL-07-WP         | 07/20/06 18:30 | 08/06/06           | Sulfate by 300.0  |                                       |

Thursday, July 27, 2006

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0014

TSV  
9/18/06

# Analytical Management Laboratories - Sample Status and Receipt Report

AML Project Number

0607162

Client AML ID

USACE Savannah

Client Project ID

Cedartown, DO# 0049

| AML Sample | Matrix | Client Sample ID | Date Collected | Projected Due Date | Analysis          | Comments                      |
|------------|--------|------------------|----------------|--------------------|-------------------|-------------------------------|
| 0607162-07 | Water  | OW-7R            | 07/21/06 08:50 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-07 | Water  | OW-7R            | 07/21/06 08:50 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-07 | Water  | OW-7R            | 07/21/06 08:50 | 08/06/06           | Chloride by 300.0 |                               |
| 0607162-07 | Water  | OW-7R            | 07/21/06 08:50 | 08/06/06           | Sulfate by 300.0  |                               |
| 0607162-08 | Water  | OW-6B            | 07/21/06 10:00 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-08 | Water  | OW-6B            | 07/21/06 10:00 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-08 | Water  | OW-6B            | 07/21/06 10:00 | 08/06/06           | Sulfate by 300.0  |                               |
| 0607162-08 | Water  | OW-6B            | 07/21/06 10:00 | 08/06/06           | Chloride by 300.0 |                               |
| 0607162-09 | Water  | OW BLank         | 07/21/06 12:00 | 08/06/06           | Sulfate by 300.0  |                               |
| 0607162-09 | Water  | OW BLank         | 07/21/06 12:00 | 08/06/06           | Chloride by 300.0 |                               |
| 0607162-09 | Water  | OW BLank         | 07/21/06 12:00 | 08/06/06           | Metals by 6020A   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |
| 0607162-09 | Water  | OW BLank         | 07/21/06 12:00 | 08/06/06           | Metals by 6010B   | Be, Cd, Cr, Pb, V, Zn, Na, Mn |

Thursday, July 27, 2006

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TSV  
9/18/06

0015

**Sample Data**  
**6020 - Metals by ICP/MS in Water**  
**QC Batch Number: P609207**

**Reviewer:**      TSV      9/8/56  
                            Initial      Date

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: OW-3  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-01RE1  
Date Collected: 07/20/06 12:31  
Date Analyzed: 09/15/06 14:41  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

**CAS NO.**  
7440-41-7

**COMPOUND**  
Beryllium

**RESULT**

**Units**  
ug/L

**Q**  
U

**LLR**  
0.500

**ML**  
1.00

**DIL**  
1



1A - Equivalent.

INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: OW-2  
Project: Cedartown, DO# 0049  
Project Num: 0607182  
Lab Sample ID: 0607162-02RE1  
Date Collected: 07/20/06 14:05  
Date Analyzed: 09/15/06 14:47  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | MLL  | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: OW-4  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-Q3RE1  
Date Collected: 07/20/06 16:47  
Date Analyzed: 09/15/06 14:53  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | MLL  | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium |        | ug/L  | U | 0.500 | 1.00 | 1   |

1A - Equivalent

INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: OW-5  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-04RE1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 09/15/06 14:58  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | MLL  | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: OW-Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-05RE1  
Date Collected: 07/20/06 13:00  
Date Analyzed: 09/15/06 15:37  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

**CAS NO.**  
7440-41-7

**COMPOUND**  
Beryllium

**RESULT**

**Units**  
ug/L

**Q**  
U

**LLR**  
0.500

**ML**  
1.00

**DIL**  
1

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: CL-07-WP  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-06RE1  
Date Collected: 07/20/06 18:30  
Date Analyzed: 09/15/06 15:43  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | MLL  | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium | 0.500  | ug/L  | J | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: QW-7R  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-07RE1  
Date Collected: 07/21/06 08:50  
Date Analyzed: 09/15/06 15:49  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

**CAS NO.**  
7440-41-7

**COMPOUND**  
Beryllium

**RESULT**

**Units**  
ug/L

**Q**  
U

**LLR**  
0.500

**MQL**  
1.00

**DIL**  
1

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: OW-6B  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-08RE1  
Date Collected: 07/21/06 10:00  
Date Analyzed: 09/15/06 15:54  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | ML   | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207  
Leach Method: NA

Sample ID: OW BLank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 0607162-09RE1  
Date Collected: 07/21/06 12:00  
Date Analyzed: 09/15/06 16:00  
Date Received: 07/27/06 10:48  
Date Leached: NA  
Date Prepared: 09/14/06 16:41

**CAS NO.**  
7440-41-7

**COMPOUND**  
Beryllium

**RESULT**

**Units**  
ug/L

**Q**  
U

**LLR**  
0.500

**MQL**  
1.00

**DIL**  
1



**QA/QC Data and Summary**  
**6020 - Metals by ICP/MS in Water**  
**QC Batch Number: P609207**

**Reviewer:**

TSV  
Initial

9/18/06  
Date

# Quality Control Association Form

Lab Name: Analytical Management Laboratories, Inc.  
QC Batch: P609207

Fraction: METALS

| Date Analyzed | Date Prepared | Lab Sample ID | Original Sample | Sample Type        | Project Number |
|---------------|---------------|---------------|-----------------|--------------------|----------------|
| 9/15/06       | 9/14/06       | 0607162-01RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-02RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-03RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-04RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-05RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-06RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-07RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-08RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/14/06       | 0607162-09RE1 |                 | SAMPLE RE-ANALYSIS | 0607162        |
| 9/15/06       | 9/15/06       | 6115003-SRD1  | 0607162-04RE1   | Serial Dilution    | 0607162        |
| 9/15/06       | 9/14/06       | P609207-BLK1  |                 | Method Blank       | 0607162        |
| 9/15/06       | 9/14/06       | P609207-BS1   |                 | LCS                | 0607162        |
| 9/15/06       | 9/14/06       | P609207-BSD1  |                 | LCS Dup            | 0607162        |
| 9/15/06       | 9/14/06       | P609207-MS1   | 0607162-04RE1   | Matrix Spike       | 0607162        |
| 9/15/06       | 9/14/06       | P609207-MSD1  | 0607162-04RE1   | Matrix Spike Dup   | 0607162        |
| 9/15/06       | 9/14/06       | P609207-PS1   | 0607162-04RE1   | Post Spike         | 0607162        |

Batch Reviewed by

JP-Whim  
JSV

Date Reviewed

9/18/06  
9/18/06

Date Printed Monday, September 18, 2006

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207

Sample ID: Method Blank  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P609207-BLK1  
Date Collected:  
Date Analyzed: 09/15/06 14:25  
Date Received:  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | SQL  | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium |        | ug/L  | U | 0.500 | 1.00 | 1   |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207

Sample ID: LCS  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P609207-BS1  
Date Collected:  
Date Analyzed: 09/15/06 14:30  
Date Received:  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | MLL  | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium | 51.2   | ug/L  |   | 0.500 | 1.00 | 1   |

1A - Equivalent

INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207

Sample ID: LCS Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P609207-BSD1  
Date Collected:  
Date Analyzed: 09/15/06 14:36  
Date Received:  
Date Prepared: 09/14/06 16:41

**CAS NO.**  
7440-41-7

**COMPOUND**  
Beryllium

**RESULT**  
51.1

**Units**  
ug/L

**Q**

**LLR**  
0.500

**ML**  
1.00

**DIL**  
1

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: METALS  
Units: ug/L

Batch: P609207  
Matrix: Water

Lab Sample ID: P609207-BS1

| Analyte   | SPIKE<br>ADDED | LCS<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|-----------|----------------|---------------|------|------------|------------------|-----|
|           |                |               |      |            | LCL              | UCL |
| Beryllium | 50.0           | 51.2          | 102  |            | 80               | 120 |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 1

7 - Equivalent  
LCS / LCS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: METALS  
Units: ug/L

Batch: P609207  
Matrix: Water

Lab Sample ID: P609207-BSD1

| Analyte   | SPIKE<br>ADDED | LCSD<br>AMOUNT | %REC | QC<br>FLAG | % REC QC. LIMITS |     | LCS/LCSD<br>RPD |
|-----------|----------------|----------------|------|------------|------------------|-----|-----------------|
|           |                |                |      |            | LCL              | UCL |                 |
| Beryllium | 50.0           | 51.1           | 102  |            | 80               | 120 | 0.196           |

Actual Number of Marginal Exceedences: 0

Number of Exceedences (ME) Allowed per DOD QSM: 0

Total Number of Analytes: 1

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207

Sample ID: Matrix Spike  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P609207-MS1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 09/15/06 15:09  
Date Received: 07/27/06 10:48  
Date Prepared: 09/14/06 16:41

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR   | MQL  | DIL |
|-----------|-----------|--------|-------|---|-------|------|-----|
| 7440-41-7 | Beryllium | 51.6   | ug/L  |   | 0.500 | 1.00 | 1   |



1A - Equivalent

INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207

Sample ID: Matrix Spike Dup  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P609207-MSD1  
Date Collected: 07/20/06 17:50  
Date Analyzed: 09/15/06 15:15  
Date Received: 07/27/06 10:48  
Date Prepared: 09/14/06 16:41

**CAS NO.**  
7440-41-7

**COMPOUND**  
Beryllium

**RESULT**  
51.3

**Units**  
ug/L

**Q**

**LLR**  
0.500

**ML**  
1.00

**DIL**  
1

7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.

Batch: P609207

Fraction: METALS

Matrix: Water

Units: ug/L

Original Sample 0607162-04RE1

Lab Sample ID for MS : P609207-MS1

| Analyte   | Original<br>Amount | SPIKE<br>ADDED | MS<br>Amount | %REC | QC<br>FLAG | % REC QC. LIMITS |     |
|-----------|--------------------|----------------|--------------|------|------------|------------------|-----|
|           |                    |                |              |      |            | LCL              | UCL |
| Beryllium | 0                  | 50.0           | 51.6         | 103  |            | 75               | 125 |

7 - Equivalent  
MS /MS DUPLICATE RECOVERY

Lab Name: Analytical Management Laboratories, Inc.  
Fraction: METALS  
Units: ug/L

Batch: P609207  
Matrix: Water

Original Sample 0607162-04RE1

Lab Sample ID for MSD P609207-MSD1

| Analyte   | Original<br>Amount | SPIKE<br>ADDED | MSD<br>Amount | %REC | QC<br>FLAG | MS/MSD<br>RPD | RPD<br>FLAG | % REC QC. LIMITS |     |     |
|-----------|--------------------|----------------|---------------|------|------------|---------------|-------------|------------------|-----|-----|
|           |                    |                |               |      |            |               |             | LCL              | UCL | RPD |
| Beryllium | 0                  | 50.0           | 51.3          | 103  |            | 0.583         |             | 75               | 125 | 20  |

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final: 50 mL / 50 mL  
% Solids:  
Instrument ID: ICPMS  
Analytical Method: 6020A  
Preparation: EPA 3020A  
Batch: P609207

Sample ID: Post Spike  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: P609207-PS1  
Dilution Factor: 1.00  
Date Collected: 07/20/06 17:50  
Date Analyzed: 09/15/06 15:32  
Date Received: 07/27/06 10:48

**CAS NO.**  
7440-41-7

**COMPOUND**  
Beryllium

**RESULT**  
47.7

**Units**  
ug/L

**Q**

**LLR**  
0.500

**MQL**  
1.00

5 - Equivalent

INORGANICS ANALYSIS DATA SHEET / Post Digestion Spike Summary Sheet

Lab Name: Analytical Management Laboratories, Inc.

Analytical Batch: 6115003

Fraction: METALS

Prep Batch: P609207

| COMPOUND  | Original<br>Amount | SPIKE<br>ADDED | PDS<br>Amount | PDS %<br>REC# | PDS %<br>REC#<br>FLAG | QC. LIMITS<br>LCL UCL |
|-----------|--------------------|----------------|---------------|---------------|-----------------------|-----------------------|
| Beryllium | ND                 | 50.0           | 47.7          | 95.4          |                       | 75 125                |

\* Values outside of QC limits

## 1A - Equivalent

## INORGANIC ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.  
Client ID: USACE Savannah  
Matrix: Water  
Initial/Final:  
% Solids:  
Instrument ID: ICPMS  
Analytical Method: 6020A  
Preparation: P609207  
Batch: 6115003

Sample ID: Serial Dilution  
Project: Cedartown, DO# 0049  
Project Num: 0607162  
Lab Sample ID: 6115003-SRD1  
Dilution Factor: 5.00  
Date Collected: 07/20/06 17:50  
Date Analyzed: 09/15/06 15:04  
Date Received: 07/27/06 10:48

| CAS NO.   | COMPOUND  | RESULT | Units | Q | LLR  | ML   |
|-----------|-----------|--------|-------|---|------|------|
| 7440-41-7 | Beryllium |        | ug/L  | U | 2.50 | 5.00 |

## 8 - Equivalent

## INORGANICS ANALYSIS DATA SHEET / Serial Dilution Summary Sheet

Lab Name: Analytical Management Laboratories, Inc.Analytical Batch: 6115003Fraction: METALSOrig HSN: 0607162-04RE1SD HSN: 6115003-SRD1Orig Dil: 1SD Dil: 5

| COMPOUND  | Original<br>Amount | SD Amount | %D | D %<br>FLAG | QC. LIMIT<br>UCL |
|-----------|--------------------|-----------|----|-------------|------------------|
| Beryllium | U                  | U         | NA |             | 10               |

\* Values outside of QC limits

## Last Page of Report

(Includes Certification Summary)

|                            |   |
|----------------------------|---|
| <b>Laboratory Name:</b>    | <b>Analytical Management Laboratories, Inc.</b>   |
| <b>Laboratory Address:</b> | 15130 South Keeler<br>Olathe, KS 66062  |
| <b>Laboratory POC:</b>     | Tenkasi S. Viswanathan<br>Email: <a href="mailto:tviswanathan@amlabinc.com">tviswanathan@amlabinc.com</a><br>Phone: 913-829-0101, ext.26<br>Fax: 913-829-1181 |

| <b>Accrediting Agency</b>                  | <b>Certificate Information</b>   |
|--|--|
| <b>State of Kansas<br/>(Primary-NELAC)</b> | NELAC Certificate No. E-10252<br>SDWA (Drinking Water), CWA (Non-potable Water), Soil<br>& Hazardous Waste (RCRA Soil & groundwater)<br>Current Period: 5-01-2006 to 4-30-2007 |
| State of Florida                           | Certificate Number: E87892   |
| State of North Carolina                    | Certificate/Lab ID: 627  |
| State of South Carolina                    | Certificate/Lab ID: 76003  |
| State of Hawaii                            | Reciprocal with Kansas - Letter dated June 20, 2006  |
| State of Nebraska                          | Reciprocal with Kansas - Letter dated August 25, 2006  |
| USACE                                      | Desk Audit - Certification Letter dated March 4, 2004  |
| Navy                                       | Desk audit - Certification Letter dated March 9, 2006  |
| DoD QSM                                    | Self certification - AML Letter dated May 25, 2006   |